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Skeptical Inquirer

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SCIENCE OVER PARTY

FIVE TIPS FOR THE LEFT AND RIGHT

TIMOTHY J. REDMOND

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Is Science Progressive or Conservative?
Mathieu Beau

What Is Semi-Fake News?
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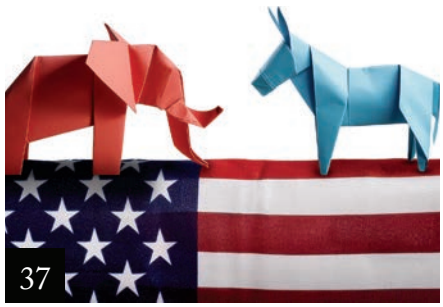

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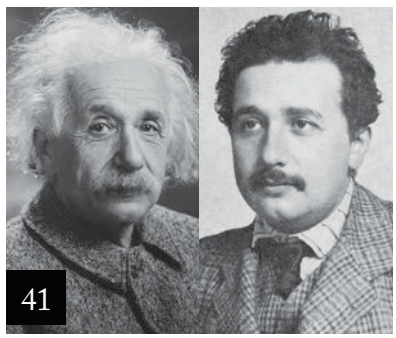

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[FROM THE EDITOR

Where's the Science in Presidential Campaign Buttons?

Presidential politics first grabbed my attention in the leadup to the '92 election due to a high school teacher's collection of memorabilia. Every day, Mr. Urech passed around a presidential campaign button so we could feel history. Many buttons rhymed, such as I LIKE IKE and ALL THE WAY WITH L.B.J. Other buttons foreshadowed future campaigns such as REAGAN~BUSH IN '80: LET'S MAKE AMERICAN GREAT AGAIN and ELECT HILLARY'S HUSBAND. None of the buttons, however, emphasized SCIENCE.

The last time science and politics intersected on the cover of Skeptical Inquirer, Jeanne Goldberg made the case that America's earliest presidents—George Washington, John Adams, James Madison, and Thomas Jefferson—"were citizen scientists" who delighted "in pursuing scientific topics" (see September/October 2017, p. 36). These presidents, Goldberg argued, "transported the scientific method of testing hypotheses and ideas, peer review, and free speech without fear of retaliation into a governmental context."The checks and balances of science, it turned out, provided a useful defining foundation for a country based on freedom.

Unfortunately, the pro-science views of our earliest leaders gave way to anti-intellectualism in the 1800s, and to this day, scientists are regularly mocked for political purposes. Fortunately, most readers of SI embrace the idea that we should all be listening to scientific consensus when it comes to scientific topics. Most of us also believe that our own political party has science on its side; this belief, however, is a bit tenuous.

In our cover story, SCIENCE OVER PARTY, Timothy J. Redmond presents research on the beliefs of both Democrats and Republicans. The prevailing beliefs associated with both major parties sometimes, the research reveals, contrasts with scientific consensus. Worse yet, both Democrats and Republicans in some research only seem to trust the results of a study if those results confirm the prevailing view of their own party. In response to these findings, Redmond's article provides five tips aimed at letting our beliefs about science be a determining factor in our political leanings rather than the other way around. And if I may add a sixth tip, I'd encourage us all to include pro-science buttons when we're adorning our attire during election season.

—Stephen Hupp

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News Bites: From Fake Picassos to Lucy's 50th Anniversary

Stephen Hupp and William M. London

Museum Curator Reveals Fake Picassos. On July 10, 2024, museum curator Kirsha Kaechele admitted that she painted fake Picassos and displayed them in the women's restroom at the Museum of Old and New Art (MONA) in Tasmania, Australia. When she first hung the paintings, she assumed her trickery would be revealed right away. "I waited for weeks," she wrote. "Nothing happened. I was sure it would blow up. But it didn't." She even "fantasized there would be a scandal." It took over three years before she finally came clean. (For more, see "'Childish and Unprofessional': Art Experts Say MONA's Fake-Picasso Stunt May Undermine Gallery's Reputation" at theguardian.com.)

'Slapping Therapy' Promoter Found Guilty—Again. On July 26, 2024, a Winchester crown court jury in England found Hongchi Xiao, sixty-one, of California, guilty of the gross negligence manslaughter of seventy-one-year-old Danielle Carr-Gomm, a British woman. Carr-Gomm, who had Type 1 diabetes, stopped taking her insulin and fasted during a "paida lajin" retreat run by Xiao at a country house in Wiltshire. Xiao claimed paida lajin, which involves slapping and stretching, "removes bodily waste, was easy to learn, helped tackle every disease known to humans, and reduced the need for patients to take 'western' medicine with 'poisonous' side-effects." In 2019, Xiao was previously found guilty in an Australian court of the manslaughter of a six-year-old boy with Type 1 diabetes who died of diabetic ketoacidosis on the fifth day of Xiao's weeklong paida lajin workshop in 2015. (For more, see *Consumer Health Digest*, Issue #24-31 at quackwatch.org/ncahf/digest24/24-31/.)

Marketer of Alleged COVID-19 Cures Sentenced to Prison. On July 30, 2024, Gordon Hunter Pedersen, sixty-four, of Cedar Hills, Utah, received a three-year federal sentence after pleading guilty to charges of mail fraud and introduction of misbranded drugs into interstate commerce with intent to defraud and mislead. He misrepresented his credentials and claimed his various silver products heal a variety of ailments, including COVID-19. In a book titled *The Silver Miracle*, he called his silver products "the greatest tool for restoring and protecting health ever discovered by science." (For more, see *Consumer Health Digest*, Issue #24-31 at quackwatch.org/ncahf/digest24/24-31/.)

FDA Rejects MDMA for PTSD. On August 9, 2024, the U.S. Food and Drug Administration (FDA) shared its decision not to approve the psychedelic drug MDMA (also called ecstasy or molly) as a treatment for posttraumatic stress disorder (PTSD). The drug could have been the first illegal psychedelic to be approved as a medicine by the FDA, but problems with research methods and safety concerns impeded their support. The FDA requested more research, opening the door for the drug to potentially be approved one day. (For more, see "FDA Rejects Psychedelic MDMA as Treatment For PTSD, Calling for Additional Study" at apnews.com.)

Discovery of 'Lucy' Approaches 50th Anniversary. On November 24, 2024, the discovery of "Lucy" will celebrate its fiftieth anniversary. The partial skeleton of this early hominin species—*Australopithecus afarensis*—was discovered in 1974 and helped demonstrate that our early relatives walked upright even before bigger brains evolved. The species lived between 3.7 and 3 million years ago. Lucy was named for the Beatle's song playing that evening—"Lucy in the Sky with Diamonds." (For more, see "The 50th Anniversary of the 'Lucy' Discovery—A Celebration of How We 'Became Human'" at iho.asu.edu/Lucy50.) ■

Stephen Hupp is editor of Skeptical Inquirer.

William M. London is the editor of the *Consumer Health Digest* electronic newsletter at the Center for Inquiry's Quackwatch.

Lucy reconstruction (National Museum of Anthropology in Mexico). Image source: Ernesto Lazaros | Wikipedia.

Assassination Attempt Spurs Conspiracies from Both Progressives and Conservatives

Benjamin Radford

The shooting of Donald Trump and several others on July 13, 2024, spawned conspiracy theories within minutes. Shootings and acts of violence have long been grist for conspiracy theorists, dating back at least to the 1963 John F. Kennedy assassination. Shootings would, at first glance, seem a very unlikely and essentially impossible event to fake. Not only would dozens or hundreds of eyewitnesses, police officers, and others be involved (and somehow silenced), but there's the undeniable deaths of real people. Many conspiracy theories (especially those involving shootings and government cover-ups) are widely shared because they help promote a specific social or political agenda.

When very famous people die—or come close to death—there's often an understandable element of shock and denial: How could glamorous and beloved Princess Diana die in a drunk driving accident? How could a lone gunman kill the iconic President John F. Kennedy? How could Michael Jackson die of a doctor-prescribed overdose? Surely there must be more to the story; surely the deaths were the result of powerful hidden forces.

Various reasons were cited for being skeptical about some aspects of Trump's attack—interestingly, from both progressives and conservatives. Some focused on what was seen as his unrealistic and context-inappropriate comments and actions, such as defiantly raising his fist and asking for his shoes seconds after being shot as his Secret Service detail scuttled him off the stage. At first glance, these do seem like strange reactions for someone who has narrowly escaped death (whether he knew that at the time or not is of course another matter).

But this may be a red herring. The simple fact is that people don't always act the way we expect them to (or in a way we assume we would under the same circumstances). One of the common pieces of "evidence" that school shooting conspiracy promoters point to is that the parents of the child victims weren't "acting like they should." In one incident, cameras followed parents out a door as they made their way to a podium for a press conference. The parents were seen smiling as they emerged from the building. The horror! Surely, the conspiracy promoters said, a grieving parent would never smile. Instead, the most likely explanation is that they're false flag actors; the children aren't really dead—though they can't explain where they in fact are—and the whole shooting was faked. But that's absurd. It's perfectly normal for grieving people to smile—or even, yes, laugh—in the wake of a tragedy. Losing a loved one does not mean you can't or should never again experience happiness or even a shared moment of humor in otherwise dark times.

By the same token, I don't find it implausible that Trump asked for his shoes moments after being shot. Is it weird? I don't know; I've (thankfully) never been shot. If I'd lost my shoes in the scuffle, I too might want to put them on before leaving. People react differently to different things. Theodore Roosevelt famously finished a speech after an attempted assassination; that's certainly unusual. One or both reactions may seem odd to people, but neither are evidence of a faked attack.

There's another reason Trump and conspiracies are closely linked: No modern politician has so successfully and routinely employed conspiracy theories as Donald Trump—many of them involving shootings, mysterious deaths, and assassinations. Trump has appeared on the radio show of Alex Jones, who has repeatedly claimed that the Obama administration faked or staged domestic shootings (including the Sandy Hook school massacre) as a pretext for confiscating Americans' guns.

During an interview with radio talk show host Michael Savage about conspiracy theories circulating soon after the 2016 death of Supreme Court Justice Antonin Scalia, Trump responded, "You know, I'm hearing it's a big topic. … They say they found a pillow on his face, which is a pretty unusual place to find a pillow." Even though there was no evidence of foul play (Scalia's family had known he was ill for some time, and a pillow was not, in fact, found over Scalia's face), this coy response allowed Trump to implicitly endorse the plausibility of the conspiracy while not explicitly associating himself with it.

Trump also suggested that the 2022 attack on Paul Pelosi, Speaker Nancy Pelosi's husband, when he was brutally beaten with a hammer in his own home, had been faked. Pelosi's attacker, David DePape, a Trump supporter, planned to abduct and torture Nancy Pelosi to expose a plan by Democrats to fraudulently keep Trump from being elected in 2020, but instead he attacked her eighty-two-year-old husband.

Just a few months before his shooting, Trump claimed—falsely and without evidence—that he'd been targeted for assassination by Joe Biden and the FBI. There is no evidence that anyone other than Thomas Crooks, a twenty-year-old Pennsylvania man, shot at Trump. His motivations remain a mystery, though he is known to have been a registered Republican who once donated $15 to a Democratic fundraiser. Crooks is known to have searched for images of both Trump and Biden and may have simply chosen the most convenient target. If Biden, the FBI, or any other government agency wanted Trump killed, it seems implausible that it would have trusted Crooks to carry

out the high-stakes, high-profile mission—especially because they would have been implicated, either by messages and documentation left behind or by Crooks himself had he not been killed by a sniper soon after shooting at the former president. (And how could they have been sure that the sniper's bullet would kill Crooks?)

Crooks had been noticed by several security officers at the site at least an hour previously acting strangely (as well as carrying a range finder). He was photographed and flagged as a potential threat. Calls for Secret Service accountability and firings have been made, and not a single member of law enforcement has come forward even hinting that they were instructed by anyone to ignore the shooter or somehow "allow" him to target the ex-president. All evidence points to a series of security failures and miscommunications, from failure to deploy a surveillance drone to poor cell service in the rural area to inter-agency command confusion.

By any standard, the Trump shooting was the most serious American security breach in decades, and the calls for explanation and accountability are warranted. Intelligence failures are often obvious in hindsight; in the wake of national events such as the September 11 attacks, the Boston Marathon bombing, a cargo ship striking Baltimore's Francis Scott Key bridge, and others, red flags are clear in retrospect with the benefit of months (or years) of focused investigations. Once you know the specifics of an incident, it's much easier to work backward and identify key information that could (or should) have been collected and connected. Regardless of the outcome of the investigation into Crooks and the failure to stop him, conspiracies will continue as long as the American public doesn't believe that the fate of our great nation is subject to fundamentally random and uncontrollable influences such as terrorism, warfare, disease, and so on. ■

Benjamin Radford is the deputy editor of Skeptical Inquirer.

Journal of Zoology Cites Skeptical Inquirer: 'If Bigfoot Is There, It Could Be a Bear'

Joe Nickell

Unless it is a costumed fake dubbed "Bigsuit," America's hairy man-beast is known today mostly by the name Bigfoot or sasquatch (after West Coast First Nations tradition). Science, however, has never obtained a single specimen of the much sighted creature, the inference being that it exists only in myth and the human imagination.

I have noticed that it is fairly common for claimed Bigfoot eyewitnesses to state they first thought they had seen a bear. Some years ago, inspired by the possibility, I began to call Bigfoot's bipedal lookalike the "Bigfoot bear." That is any bear, commonly black or brown (grizzly) that may be mistaken for Bigfoot/sasquatch—especially when it is in its alert mode, standing on its hind legs and sniffing the air.

People might easily be fooled by a lookalike, especially when sighting conditions are poor—such as the creature being at a distance, in nighttime, or partially hidden by bushes. Maybe they should reconsider their first impression given the similarity of Bigfoot and bears.

Bears can stand on their hind legs, and some species thus walk over 400 meters bipedally. Bears also prove to be outstanding climbers, powerful swimmers, and fast runners. Just such traits of the black bear make it an especially likely candidate for many alleged sasquatch sightings. According to an article by Floe Foxon of the Folk Zoology Society, published in the *Journal of Zoology*, the bear-as-sasquatch hypothesis continues to gain credibility (Foxon 2024).

Bigfoot/sasquatch encounters are expected to increase: "On average, across all states and provinces in 2006, after controlling for human population and forest area, there were approximately 5,000 bears per sasquatch sighting. Based on statistical considerations, it is likely that many supposed sasquatch are really misidentified known forms. If Bigfoot is there, it could be a bear." ■

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Joe Nickell, PhD, is CSI's senior research fellow. His new book is *The Science of Monsters: Tracking the Real-Life Creatures* (2024).

In Memory of CSI Fellow Mark Edward

SUSAN GERBIC

Mark Edward Wilson, who was known by the stage name Mark Edward, died Sunday, August 4, 2024, at home after a years-long battle with prostate cancer. Edward was born May 19, 1951, in Los Angeles County to William Edward Wilson and Betty Jean Schaeffer. He was raised in Rancho Palos Verdes and lived in San Pedro until he moved to Salinas in 2019.

Edward graduated from Palos Verdes High School in 1970 then earned a bachelor's degree of Fine Arts in 1974 from California Institute of the Arts. In his teenage years, Edward was in various Dada and punk bands, including Rat Salad, The Techno-Cats and ZaSu Pits, and the Enema Dog Review.

His grandfather, George Schaeffer, interested Edward in magic, which led to a lifelong career. Eventually becoming bored with standard magic, he then gravitated toward mentalism and educated animal acts and became a performer at Hollywood's Magic Castle in 1975. He worked the Houdini Séance room for fourteen years and continued to perform mentalism at the Castle and elsewhere up until his death.

In 1990, Edward began working for the Psychic Friends Network and became one of their top psychics. All those years, he was also associated with the scientific skepticism community and used his behind-the-scenes knowledge to write his 2009 book, *Psychic Blues: Confessions of a Conflicted Medium*, exposing the secrets of the psychic world. Over the years, he was sought out for his expertise and appeared on *Penn & Teller Bullshit!*, *The Con*, *Brain Games*, *Adam Ruins Everything*, and many other shows.

Mark Edward in 2023 at the Magic Castle in Hollywood, California. Credit: Susan Gerbic

Edward traveled the world, often with me, his partner, lecturing about the psychic world, demonstrating cold and hot reading to audiences, and warning about the dangers of mediumship. He coined the phrase "grief vampire" to describe mediums who prey on vulnerable people. Edward also wrote many books on séance theory and mentalism. He became involved in outing mediums in various ways, including in Operation Pizza Roll, which was featured in the *New York Times* in 2019. He was a member of the Monterey County Skeptics and AboutTimeProject.org. In 2022, he was honored as a fellow of the Committee for Skeptical Inquiry.

Edward also worked for the City of Los Angeles in Parks and Rec. His cancer was diagnosed in 2018, but because of science and great medical care, he was able to live a full and exciting life teaching and performing magic, lecturing, reading, traveling, and spending quality time with friends. He died at home, surrounded by people and animals who loved him. His death was very peaceful. Mark Edward is survived by my sons, Caspian (Jamie) and Stirling, and me, plus his chosen family of hundreds who honored and respected him. ■

Susan Gerbic is the cofounder of Monterey County Skeptics and a self-proclaimed skeptical junkie. She is also founder of the Guerrilla Skepticism on Wikipedia (GSoW) project and a fellow of the Committee for Skeptical Inquiry.

Thinking Critically about Critical Thinking: What Do We Really Mean?

MELANIE TRECEK-KING

Most people agree that critical thinking is an important skill that should be taught in schools. And most educators think they teach critical thinking. I know I did. After all, I was a science educator, and science *is* critical thinking. Isn't it?

For years, I taught general-education biology, a course commonly taken by undergraduates who aren't science majors. And while I love biology, I grew more and more frustrated with the content. I asked myself: If I had one semester to teach the average student what they need to know about the process of science and critical thinking, what would it look like?

Thankfully, my college allowed me to replace my traditional introductory biology course with a course titled Science for Life, designed to teach critical thinking, information literacy, and science literacy skills (Trecek-King 2022). Since my conversion, I've been sharing my new path with anyone who will listen about the value of teaching critical thinking.

Yet conversations with Bertha Vazquez, director of education for the Center for Inquiry, gave me pause. In a recent podcast conversation with the two of us and Daniel Reed (of the West Virginia Skeptics Society), Vazquez was adamant. Educators *do* teach critical thinking: the Next Generation Science Standards (NGSS) require students to ask questions, plan and carry out investigations, analyze and interpret data, construct explanations, and engage in arguments from evidence.

As a science communicator, I constantly fight misconceptions around certain terms. *Theory* and *skepticism* are prime examples. So imagine my surprise (and embarrassment) when I realized that, as a critical thinking educator, I had overlooked an important first step in critical thinking: defining terms. The irony.

What Is Critical Thinking?

While we can all agree that it's important to teach critical thinking, there's not always agreement on what we mean by the term.

In his book *Critical Thinking*, Jonathan Haber (2020) explains how the concept emerged and some of the ways it's currently defined. John Dewey, in his 1910 work *How We Think*, proposed one of the first modern definitions of reflective thinking, describing it as an "active, persistent, and careful consideration of any belief" (Dewey 1910, 6).

In his 1941 dissertation, Edward Glaser identified three components of critical thinking: "(1) an attitude of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experiences, (2) knowledge of the methods of logical inquiry and reasoning, and (3) some skill in applying those methods" (Glaser 1941, 5–6). That same year, Glaser and Goodwin Watson published the Watson-Glaser Tests of Critical Thinking (now the Watson-Glaser Critical Thinking Appraisal), a widely used standardized test for assessing critical thinking skills.

Critical thinking's "big bang" moment, according to Haber, came in the early 1980s when the state of California (Harmon 1980, 3) mandated that all students in its university system complete a course that teaches "an understanding of the relationship of language to logic, leading to the ability to analyze, criticize and advocate ideas, reason inductively and deductively, and reach factual or judgmental conclusions based on sound inferences drawn from unambiguous statements of knowledge or belief."

And the Delphi Report (Facione 1990, 2), in which Peter Facione worked with critical thinking experts to create a consensus definition, concludes that critical thinking is a "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based."

From these (and many other) definitions, Haber identifies three interconnected parts of critical thinking: knowledge of critical thinking components, such as logic and argumentation; the skills to put the knowledge to use in real-world situations; and the dispositions needed to prioritize critical thinking honestly and ethically.

This problem-solving view of critical thinking forms the basis of many of the current educational standards, including the NGSS and Common Core, which ask students to think deeply within a specific domain. And it is one scientists themselves use when trying to understand issues.

These are worthy educational goals to be sure. However, in my experience teaching general-education biology, I've come to realize that this approach is incomplete.

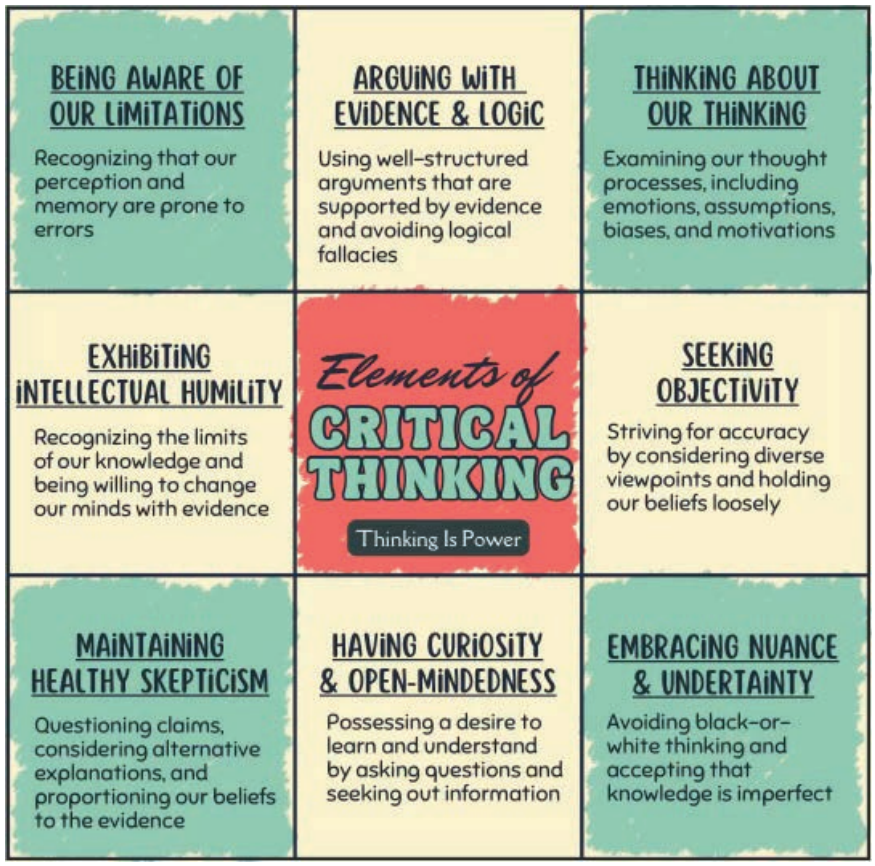
If critical thinking requires deep

knowledge, then our ability to analyze topics is limited to areas in which we possess sufficient expertise. Pedagogy that encourages "independent" thinking outside these areas can have the unintended consequence of teaching students to overestimate their abilities. The best minds know they can't know everything. Even experts rely on other experts and sources.

Additionally, in the classroom, students are provided with reliable content from which to critically analyze. In the "real world," these guardrails are nonexistent. Not only is misinformation ubiquitous, disinformation purveyors exploit our biases and emotions to manipulate our reasoning.

And finally, we can't address science misinformation, from evolution to vaccines to climate change, by giving students more content knowledge. We don't fall for science denial and pseudoscience because we don't have the facts but because of our emotions, desires, identities, and biases.

I now have a better understanding of what my colleague and friend Andy Norman means when he says that critical thinking suffers from a branding problem.


BEING AWARE OF OUR LIMITATIONS
Recognizing that our perception and memory are prone to errors
ARGUING WITH EVIDENCE & LOGIC
Using well-structured arguments that are supported by evidence and avoiding logical fallacies
THINKING ABOUT OUR THINKING
Examining our thought processes, including emotions, assumptions, biases, and motivations
EXHIBITING INTELLECTUAL HUMILITY
Recognizing the limits of our knowledge and being willing to change our minds with evidence
Elements of CRITICAL THINKING
Thinking Is Power
SEEKING OBJECTIVITY
Striving for accuracy by considering diverse viewpoints and holding our beliefs loosely
MAINTAINING HEALTHY SKEPTICISM
Questioning claims, considering alternative explanations, and proportioning our beliefs to the evidence
HAVING CURIOSITY & OPEN-MINDEDNESS
Possessing a desire to learn and understand by asking questions and seeking out information
EMBRACING NUANCE & UNDERTAINTY
Avoiding black-or-white thinking and accepting that knowledge is imperfect

Yes, And …?

Using the above definition(s), I was teaching my biology students how to think critically. For example, I didn't just ask them to memorize the stages of mitosis but to explore the mutations that could disrupt the cell cycle and lead to cancer. But to what end? If (or when) my former students are touched by cancer, will they remember how proto-oncogenes and tumor suppressor genes can lead to unregulated cell growth? Is that even what they need to know? I argue that, especially for students who aren't going to be scientists, it's far more important to teach students how and why the process of science results in reliable knowledge … and how to find it.

My Science for Life course and my Thinking Is Power resource are both based on the same premise. Knowledge may be power, but there's too much to know. Even more, knowledge is a process; it's not just *what* we know but *how* we know. It's not just a noun but a verb. When we need reliable knowledge, can we find it and use it to make wiser decisions? And how do we know what information to ignore?

As a science educator, I want my students to understand how the process of science produces knowledge and why it's reliable. Why aren't comments such as "it worked for me" or "I know what I saw" sufficient evidence? I've come to realize that an essential—and often overlooked—ingredient is why we need science in the first place.

Richard Feynman famously said, "The first principle is that you must not fool yourself, and you are the easiest person to fool." Science is how we correct for this tendency toward self-deception. That's why I spend the first third of the semester exploring how we come to our beliefs, the limits of our perception and memory, the importance of skepticism, the cognitive biases that can lead our thinking astray, and the logical fallacies we use to convince ourselves (and others) that our conclusions are justified.

Influential voices in the skeptical community played a crucial role in shaping the ingredients of critical thinking I use in Science for Life and Thinking Is Power, which include the following:

- **Being aware of our limitations:** Understanding that our perception and memory are flawed, and the biases and heuristics our brains rely on to make fast and easy decisions can lead us astray.
- **Arguing with evidence and logic:** Using arguments that are well-structured and supported by evidence. This includes understanding how the different types of arguments work (i.e., deductive, inductive, and abductive) and avoiding logical fallacies.
- **Thinking about our thinking (metacognition):** Actively examining and questioning our own thought processes—including the source of our knowledge, assumptions, intuitions, motivations, emotions, and biases—and how they might influence our judgments.
- **Embracing nuance and uncer-**

tainty: Avoiding the black-or-white thinking that can lead to oversimplified conclusions and accepting that our knowledge is never perfect or complete.

- **Seeking objectivity:** Actively working to counter the limitations that prevent us from accurately understanding the world. This includes seeking diverse perspectives, separating our identity from our beliefs, and prioritizing accuracy over ego.
- **Having curiosity and open-mindedness:** Possessing a desire to learn and understand by asking questions and seeking out information, even if it contradicts what we want to believe.
- **Maintaining healthy skepticism:** Balancing gullibility and doubt and proportioning our beliefs to the available evidence. And remembering that claims made without evidence can be dismissed without evidence and extraordinary claims require extraordinary evidence.
- **Exhibiting intellectual humility:** Recognizing the limitations of our knowledge, being open to the expertise of others, and being willing to change our minds with evidence.

In my experience, giving students this foundation is essential for helping them become better consumers of information and science. Without an awareness that our emotions and existing beliefs can drive our reasoning, search engines and low-quality sources become tools to confirm our biases. And without an understanding of how our identities and worldviews can alter our standards of evidence, pseudoscience and science denial provide cover for what we want or don't want to believe.

The logic of science's practices, from carefully controlling experimental variables to making the findings available to other experts for scrutiny and replication, falls into place once students understand the problems it's addressing. Simply put, science is our shield against self-deception.

Now instead of asking students to think critically about the biology of cancer, I teach them how to evaluate sources to find reliable information, how to recognize pseudoscientific "treatments," and how their need for hope and answers makes them vulnerable to misinformation.

The Take-Home Message

I have no doubt that most educators teach critical thinking. But for pedagogical and communication purposes, it would be beneficial to clarify what we mean—and just as importantly to ask ourselves what we want our students to learn.

The dominant view of critical thinking in education is problem-solving in specific domains, which is absolutely a valuable skill. However, many skeptics view critical thinking as good thinking in a broader sense. My own teaching shifted toward this latter framework after I realized that problem-solving skills are insufficient without a foundation in better thinking. We may be born with the ability to think, but we must be taught to think *well*, and our primate brains aren't adapted to today's tidal wave of misinformation.

I'm grateful to the skeptical community for challenging my assumptions about critical thinking and my friend Bertha Vazquez for encouraging me to think more deeply about the good work science educators do in their classrooms every day. This article is the result of my attempt to reconcile what critical thinking means to educators and what it means to skeptics, and my hope is that it opens a conversation about how we can better serve our students. Maybe it will even start a critical thinking revolution, especially in science education.

Let the critical thinking revolution begin! ■

Acknowledgments

My thanks go to those on this brief list of skeptical thinkers/authors who've influenced my understanding of critical thinking: James Alcock, Timothy Caulfield, John Cook, Brian Dunning, Julia Galef, Adam Grant, David Robert Grimes, Jon Guy, Harriet Hall, Guy Harrison, Daniel Kahneman, David McRaney, Steven Novella, Carl Sagan, Michael Shermer, and Carol Tavris.

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Melanie Trecek-King is the creator of Thinking Is Power—whose name is a riff on the old adage "knowledge is power"—which empowers individuals with the skills to make better decisions and protect themselves from misinformation. Trecek-King is an associate professor of biology at Massasoit Community College, where she teaches an award-winning science course designed to equip general-education students with essential critical thinking, information literacy, and science literacy skills. An active writer, speaker, and consultant, Trecek-King loves to share her "teach skills, not facts" approach with other science educators and help schools and organizations meet their goals through better thinking.

For more, view **Melanie Trecek-King's 2023 CSICon Presentation**

(scan the QR code to view the video at skepticalinquirer.org)

COMMENTARY]

Critical Thinking in the Classroom: How CFI's Generation Skeptics Can Help

BERTHA VAZQUEZ

I have missed working with my former colleagues since retiring from the classroom in June 2023. Fellow science teachers Ana and Eli and I often planned our lessons together and made it a point to teach environmental science as comprehensively as possible. Climate change was taught thoroughly with positive results.

Over time, however, I noticed an important flaw in our instruction. We were not successful in changing the minds of the students, parents, and colleagues who denied that climate change was real. Thanks to a conversation with Melanie Trecek-King (developer of the Thinking Is Power resources), I now understand why. My colleagues and I followed what is known as the information deficit model, which assumes that people refuse to acknowledge the truth due to their lack of knowledge. Our strategy involved providing factual information about climate change to those who do not accept it (Reincke et al. 2020). Trecek-King introduced me to a new way of thinking. She asked me: What if facts aren't the problem? According to Adrian Furnham and Charlotte Robinson (2022), a person's political affiliation is a better predictor of their acceptance of anthropogenic climate change than their knowledge of the topic. Our beliefs are often associated with our identities rather than factual evidence.

I'm sorry I learned this too late to educate my own students, but I'm happy I can use this concept as I promote CFI's education program Generation Skeptics.

This brings me to the term *critical thinking*. One of the recurring themes I encounter when speaking with my fellow skeptics is that teachers need to teach critical thinking in their classrooms. This irks me beyond measure. Dear Skeptical Community: Teachers *do* teach critical thinking; rote memorization went out with mullets and legwarmers. They encourage their students to ask questions, plan and carry out investigations, engage in arguments based on evidence, and communicate results effectively. As evidence, I offer here a typical item found on the AP Biology exam (AP Central 2024).

> In a certain prairie community, a dominant prairie grass species has recently been infected with a virus that disrupts one of the electron transport proteins in the chloroplasts of the infected cells.
>
> Describe the most likely effect on the cellular processes (be specific as to which processes and molecules will be most likely affected).
>
> Describe and explain the most likely effect on individual infected plants.
>
> Predict the short-term effects (within one year) on the infected plant populations and their community. Justify your prediction.
>
> Predict the long-term effects (years to decades after infection) on the infected plant populations and their community. Justify your prediction.

Items like this assess critical thinking, and teachers are preparing students to address such items. Oh, sure, you say, but that's AP Biology, a difficult course for advanced college-bound students. Fine. Here's an item from Florida's end-of-course biology exam, a class taken by almost all high school students in the state. My students were fourteen or fifteen years old when they took this exam (End-of-course [EOC] assessments 2024):

> Eurasian watermilfoil is an invasive plant species in a pond being studied by ecologists in the Northeast United States. It grows quickly and forms extremely dense mats in the water. None of the consumers included in the food web eat Eurasian watermilfoil. The following are the changes in the population density of two pond

species since the appearance of Eurasian watermilfoil.

Water lily density (# per square meter) before and after Eurasian Watermilfoil appeared: 1.5, 0.6.

Pondweed density (# per square meter) before and after Eurasian Watermilfoil appeared: 2.6, 1.0.

a. Based on the data in the table, describe what has happened to the water lily and pondweed populations since the appearance of Eurasian watermilfoil in the pond ecosystem.

b. Explain two ways that the Eurasian watermilfoil could have caused these changes in the water lily and pondweed populations.

c. Identify one primary consumer and one secondary consumer in the illustration. For each organism you identified, describe and explain the likely effect of the presence of Eurasian watermilfoil on the population. Be specific in your response.

Bertha Vazquez teaching the next generation of skeptics.

I hope you'll agree that both questions require some degree of critical thinking. After conversations with other skeptics, such as Daniel Reed of the West Virginia Skeptics Society, I realized that what we had was a problem of semantics. What skeptics were calling critical thinking is not what I interpreted as critical thinking as a classroom teacher. This issue reminds me of a quote from Inigo Montoya in the movie *The Princess Bride*: "You keep saying that word; I don't think it means what you think it means."

Thanks to these conversations, I can also point out what teachers do *not* teach: We do *not* teach about the role of personal beliefs and experiences in the interpretation of information. We do *not* teach how what we believe can prevent us from accepting facts. We do *not* teach about science denial and pseudoscience and how they often find their way into the news, social media, and, sadly, our own classrooms.

CFI's Generation Skeptics aims to help teachers incorporate these components that are not presently taught in schools. Through quick daily bellringers and extended lessons, we are making it easy for teachers to teach what skeptics call "critical thinking."

Recently, I presented the Generation Skeptics program to a large group of interested teachers in Denver. Teachers are well aware of the firehose of misinformation their students face online. My advice included posting Richard Feynman's famous quote on their classroom doors: "The first principle is that you must not fool yourself, and you are the easiest person to fool."

I stressed that this should be an ongoing theme in our classrooms. Science is the best method we have to avoid fooling ourselves. That's why we discuss control groups, double-blind protocols, the peer review process, and the need for replicability in science class. If this strategy is implemented effectively, students will be more likely to accept a "controversial" topic such as climate change. It's certainly better than saying, "Here's what we know about climate change. Yeah, it contradicts everything you already believe, but, you know, it's science. So, you need to accept it." It's also a way to demonstrate that not all ways of knowing are created equally.

So, next time you chat with a schoolteacher, don't tell them they need to start teaching critical thinking in their classrooms. Instead, share information about CFI's exciting educational program Generation Skeptics, and let them know we are at their service. Teachers can check out our daily skeptical thinking exercises, called "Bellringers for Better Thinking" at generationskeptics.org. (Generation Skeptics also has a camp programming booklet for after-school and summer camps available on its website.) ■

GENERATION SKEPTICS
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Bertha Vazquez is the Center for Inquiry's director of education.

[POSTCARDS FROM REALITY

ROBYN E. BLUMNER

Robyn E. Blumner is president and CEO of the Center for Inquiry and executive director of the Richard Dawkins Foundation for Reason & Science. She is a lawyer who previously held posts as a syndicated columnist and editorial writer at the *Tampa Bay Times* and as executive director of the ACLU of Florida and ACLU of Utah.

The Cass Review: Are We Experimenting on Kids?

First things first: What is the Cass Review?

It is a report out of England on how best to treat young people who are experiencing gender dysphoria or questioning their gender identity (Cass 2024).

The independent review was a thorough analysis of the available science and treatment studies. Tapped to head the investigation was Dr. Hilary Cass, one of England's leading pediatricians. It was commissioned by the United Kingdom's National Health Service (NHS) to guide the organization on these issues going forward.

The conclusions drawn put a yellow caution sign in front of any rush to medicalize treatment for minors who are having gender-identity issues.

Gender clinics, therapists, and doctors were often moving too fast and failing to take other mental health issues into account, the report concluded. In general, clinicians were unable to confidently identify those young people who retain a transgender identity into adulthood and those whose gender identity issues will naturally resolve, it found, which suggests that doing anything irreversible is a risky course of action. And there is weak evidence for the early use of puberty blockers, with their positive impact questionable and their long-term consequences poorly understood.

This was not what the trans-activist community wanted to hear. There were denunciations of the Cass Review (WPATH and USPATH 2024) and, more prominently in the United States, a determined effort to ignore it.

I give a lot of credit to *New York Times* opinion columnist Pamela Paul, who has been willing to draw attention to the issue. Her piece in July titled "Why Is the U.S. Still Pretending We Know Gender-Affirming Care Works?" punctured the mainstream media's radio silence that had greeted the Cass Review in the United States since its publication in April.

Paul said the Department of Health and Human Services (HHS) and the American Medical Association (AMA) have not responded to the blockbuster report, and when she pressed those entities, HHS wouldn't respond on the record, and the AMA punted to the American Academy of Pediatrics and the Endocrine Society—which basically said there's nothing new to say in response.

As Paul points out, other countries did pay attention and took strong actions. In England, the government ended puberty blockers for young people under eighteen. And reevaluation of the use of medical interventions before the age of majority is happening in Scandinavian countries, France, Germany, and elsewhere.

The United States is an outlier among Western nations in part because anything that touches on transgender issues has been so politicized. It is hard to raise concerns about early interventions, because to do so makes it seem like you are making common cause with anti-transgender bigots. Yet nothing could be further from the truth. It is not only an act of compassion to worry about the medical and psychological health of children with gender identity issues; it is a medical responsibility to establish which interventions are safe and effective and at what ages.

To my mind, and perhaps I'm not reading the room as well as I should, it seems obvious that the use of feminizing and masculinizing hormones and any surgical interventions—both of which are demonstrably permanent to one degree or another—should be held off until the age of majority. Gender dysphoria is a real phenomenon, and young people afflicted with it deserve our support. But until medical science develops the tools to determine to a near certainty who is gender dysphoric and who has other mental health or psychosocial problems that present as gender-related distress, only adults should be making these life-altering decisions for themselves.

That is not what is going on, however.

What we've seen from whistleblowers at gender clinics is that under the guise of "gender-affirming care," there has been an aggressive and dangerous push to medically treat any minor who questions their biological sex. Heartbreaking accounts such as one by Jamie Reed (2023), a self-described queer woman married to a transgender man, who worked at The Washington University Transgender Center at St. Louis Children's Hospital, have pulled back this disturbing curtain. "Many encounters with patients emphasized to me how little these young people understood the profound impacts changing gender would have on their bodies and minds," Reed wrote in 2023. "But the center downplayed the negative consequences, and emphasized the need for transition."

In the United States, a report on a recent analysis of national insurance claims from 2017 to 2023 found there had been at least 5,288 (and potentially many more) "gender-affirming" double mastectomies for girls who were still minors (Sapir 2024). The analysis found

shockingly that somewhere between fifty and 179 girls who were twelve-and-a-half years of age or younger had the procedure.

The Tavistock Clinic in the United Kingdom, which treated young people with gender identity issues, was recently ordered closed after multiple insider accounts indicated that children with a raft of mental health and other problems, such as being bullied for being gay, were being given life-altering cross-gender medical interventions instead of holistic and individualized care (Barnes 2024).

Obviously, this approach is wrong. Children should not be making such consequential decisions when they have such little understanding of what they are giving up or committing to. Commentator Andrew Sullivan (2024) rightly worries that in today's political climate, a tomboy girl or effeminate boy will be pushed in the transgender direction when really they may just be gay.

So, again, I believe there should be no sex-reassigning hormones or surgeries until the age of majority, which is not what America's medical establishment says. It pushes "gender-affirming care" for children, including cross-sex hormones starting in "early adolescence" (Office of Population Affairs 2023).

But the bigger and more difficult question is whether the use of puberty blockers should be employed. Because puberty happens before the age of majority—in girls the average age is eleven, and in boys the average age is twelve—the use of these drugs has to happen well before age eighteen to have the desired effect. The idea is that these drugs can temporarily pause puberty, giving a young person time to decide how to proceed. The press on puberty blockers is that they are completely safe and reversible, a no-harm intervention.

Well, the science suggests the story is more complicated.

The first question is why we need to pause puberty for children who will be transgender adults. The claims are that the intervention helps the mental health of young people with gender identity issues and reduces the risk of suicide. But the Cass Review says there is sparse evidence of this, and the quality of the studies to date have been poor.

Another reason is that by delaying puberty and eventually moving into cross-sex hormone treatments, a transgender person's future adult self can more easily pass as the gender opposite to their biological sex.

The science indicates that transgender men will easily masculinize on testosterone at any point in development, so there is no medical reason to begin puberty blockers early. But for transgender women, puberty blockers will help prevent some irreversible changes that will imprint masculinity on the body, so there are demonstrable benefits.

Here is how the Cass Review concludes its recommendations on puberty blockers: "In summary, there seems to be a very narrow indication for the use of puberty blockers in birth-registered males as the start of a medical transition pathway in order to stop irreversible pubertal changes. Other indications remain unproven at this time."

The review also found multiple studies of puberty blockers that indicate bone density is compromised and height gain may be negatively affected. But more longitudinal studies are needed to determine whether those affects resolve later in adulthood. There are also questions about the impact of puberty blockers on neurocognitive development. Again, more and better research is needed to see if this reduced psychological functioning is permanent.

These are tremendously difficult medical issues with much that is unresolved. What is apparent is the United States medical establishment is failing in its duty to squarely face the complexity of transgender care and fess up to the unknowns. Only the American Society of Plastic Surgeons has expressed hesitancy about surgical interventions for minors with gender issues—and it did so just in July 2024 (Sapir 2024).

Unlike their European counterparts, the refusal of American medical groups and government health authorities with Democratic ties to even acknowledge the Cass Review shows that we have entered an arena of ideology instead of science.

This is especially true because the advocacy group in the United States that has a great deal of influence on standards of gender care here, the World Professional Association for Transgender Health (WPATH), has been credibly accused of manipulating and deep-sixing the science when researchers at Johns Hopkins didn't reach their preferred conclusions about the value of gender-affirming care ("Research into Trans Medicine" 2024).

The losers in all this are children who are being permanently altered and even disabled at the hands of those whom they trust to "first, do no harm." What American doctors themselves won't fix undoubtedly the American legal system will step in to handle (Schlott 2023). I hope their malpractice insurance is paid up. They are going to need it. ■

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[INVESTIGATIVE FILES JOE NICKELL

Joe Nickell, PhD, has spent more than half a century probing historical, forensic, and paranormal enigmas.

Impostor or Grand Duchess Anastasia? Secrets in Hidden Graves

As an outcome of World War I, Russia's Romanov dynasty, which had ruled for over four centuries, met a brutal end. In the 1917 revolution, military defeats with high causalities caused the forced abdication of the tsar, Nicholas II, and then, under the direct orders of Lenin, the assassination of the entire Romanov family. In addition to Tsar Nicholas (age fifty), it included the tsarina, Alexandra Feodorovna (forty-six); the couple's four daughters, Olga (twenty-two), Tatiana (twenty-one), Maria (nineteen), and Anastasia (seventeen); and the Romanov's son Alexi (thirteen), the heir-apparent, or tsarevitch. The seven were interned by the Bolsheviks at a stately residence called the Ipatiev House in Ekaterinburg, Siberia.

On the night of July 16–17, 1918, the family was herded together into one room by their guards, who raked them with a hail of bullets. Any still showing signs of life were finished off with bayonets and rifle butts. It is said that they were hard to kill because they wore beneath their clothes gold wire wound about their bodies and so many jewels sewn into their dresses as to render them nearly bulletproof (Donald 2021, 145; Rappaport 2014, 361).

Anastasia Romanov (front left) with some of her family in 1916. Image source: Beinecke Rare Book and Manuscript Library, Yale University | Wikipedia.

The Missing Bodies

Following the brutal killings—which included four members of their retinue (their physician, a footman, a cook, and a maid)—investigators soon found the household scene of the crime, but the bodies proved elusive. Stripped of clothing and jewels, they had been dumped in a remote mine shaft, but widespread rumors forced a secret relocation of the remains.

We know of the entire matter—from the assassinations to the disposal of the bodies—due to an account of the affair by its commander, Jacob Yurovsky. He related how the following night he and his men used ropes to haul the corpses from the mine shaft, then took them to another site where they were doused with sulfuric acid. Yurovsky burned two of the bodies, that of the young tsarevitch and the body of a woman whose identity he was confused about—first saying it was the tsarina but later concluding it was instead her maid. (He was apparently wrong on both counts [Maples 1994, 238–251].)

The actual location of the rehidden corpses would remain lost until the 1980s when the Soviet Union under President Mikhail Gorbachev launched a period of *glasnost* ("openness") and declassified thousands of previously secret documents (including the Yurovsky account).

Symbol of the House of Romanov.
Image source: Taubiy | Wikipedia

Anastasia Found?

Meanwhile, doubts lingered as to whether the Romanovs were indeed massacred. Conflicting accounts pointed not only to their survival but suggested they had been smuggled into Poland. Indeed, the British High Commissioner in Ekaterinburg reported that the tsarina and her daughters had left the city on a sealed train the day following the alleged execution. Another report claimed the royal family escaped to Poland where they headed the anti-Communist underground—the tsarina dying peacefully in 1924 and the tsar as late as 1952 (Nash 1978, 381).

Still other rumors flourished, in part because of the fabulous riches attributed to the Romanov family. As one source notes (Healey 1999, 59): "And with such an inheritance, there was no shortage of pretenders to the tsar's estate. Over the decades that followed the Revolution, scores of treasure-seekers, fantasists and downright maniacs came forward, asserting that they were royal survivors of the Ipatiev house massacre."

Of all the claimants, the most famous was a woman calling herself Anna Anderson. She came to light in 1920 when she was rescued from a Berlin canal, where she had attempted to drown herself. Her body displayed scattered scars, as from stab and bullet wounds. Following a long hospital stay in which she was noncommittal about her past, she eventually revealed that she was the Grand Duchess Anastasia! She stated that she had indeed been transferred by train from Ekaterinburg, with her mother and sisters, to another place of confinement. During three attempted escapes, she said she had been beaten and even raped. Finally, she said that getting free once again, she traveled incognito and—aided by a Russian soldier—rode to Bucharest in a farm cart (Healey 1999, 59; Lawhon 2018, 289).

She created a sensation. Some of her purported relatives and friends, as well as staff of the Romanovs who were brought to meet her, were convinced she was indeed Anastasia. These included the Grand Duke Andrew, the tsar's cousin. Others, however, were more dubious. Prince Felix Yusupov labeled her "an adventuress, a sick hysteric, and frightful play actress." Nevertheless, she became the subject of countless newspaper articles, several books, and even plays and films, as well as a lawsuit in Germany that continued for thirty-two years (Healey 1999, 59).

She certainly outdid other Anastasia claimants, including a New York resident named Eugenia Smith (Nash 1978, 382), who gained comparatively little attention until a 2024 book appeared with die-hard claims for Smith-as-Anastasia (Froebel-Parker 2024). And so Anna Anderson continued her claims until her death in 1984 "with historians no more certain of her identity than they had been sixty years earlier" (Healey 1999, 59).

Science to the Fore

Although crucial DNA testing remained far into the future, there was nevertheless a forensic card that could be played. Identification experts knew that ears constitute characteristic, identifiable features just like fingerprints. Remaining unaltered from birth to death, in cases wherein a person must be identified by photograph, ears can play a deciding role (Nickell and Fischer 1999, 247–248).

And so it was, as described in a 1952 forensic text, that Anna Anderson was subjected to ear identification testing. While she had a superficial similarity to the real Anastasia, "Professor Bischoff, the head of the Scientific Police Institute at Lausanne, Switzerland, established her non-identity by means of the ears—by comparing profile photographs of the impostor and of the real Anastasia" (Soderman and O'Connell 1952, 97). (A profile photo of Anastasia, showing her left ear, is given in Rappaport 2014, 236h.)

Profile photograph of Anna Anderson, who adopted the identity of Grand Duchess Anastasia of Russia.

This decisive evidence settled the case scientifically. Unfortunately, because that fact was not widely circulated, as a practical matter, the dark-eyed beauty calling herself Anna was able to continue her masquerade for decades more. (For rare photos of her in 1928 and 1955, see Healey 1999, 60.) Although final resolution of the Romanov family's fate awaited the discovery of their remains and the advent of DNA typing in 1986 (Nickell and Fischer 1999, 201–202), even then there would be unforeseen difficulties.

The Secret Grave

The claims of numerous Romanov pretenders were shaken by the dramatic 1989 discovery of the long-hidden

burial site. The location was a birch swamp some twelve miles outside Ekaterinburg, revealed by Yurovsky's notes. Subsequently, Russian President Boris Yeltsin ordered an official investigation of the crime scene. Beneath a layer of logs was a pile of blackened, greenish bones. The initial discovery, as it turned out, had been made ten years earlier but awaited the development of *glasnost* with its spreading spirit of free enquiry (Nickell and Fischer 1999, 285).

In 1992, the Russians asked American forensic experts for technical assistance in identifying the remains. Famed forensic anthropologist William R. Maples assembled a team of experts that included medical examiners such as Dr. Michael Baden (who, incidentally, had previously served on the advisory board for my first book, *Inquest on the Shroud of Turin*, 1983), together with hair and fiber microscopist Cathryn Oakes and Maples's wife, Margaret, a media specialist who would assist in documenting the investigation.

In all there were nine skeletons, five female and four male, rather than the expected eleven that had been executed in 1918 (again, seven Romanov family members plus four staff). Actually found were the bones of Nicholas II; Tsarina Alexandra; three daughters, Olga, Maria, and Tatiana; the physician (who had attended to Tsarevitch Alexi, a hemophiliac); the tsarina's maid; the family cook; and the footman.

Missing, in addition to Tsarevitch Alexi, was Anastasia. Could it be that Anna Anderson was the long-lost Anastasia after all? In 1993, what Maples calls "the story of the royal bones" was dramatically developed when mitochondrial DNA tests were done. Because both the tsarina and the husband of Queen Elizabeth, Prince Philip, were descendants of Queen Victoria, experts obtained a blood sample from the prince and extracted the mitochondrial DNA. The Russians then supplied a sample of the Romanov bones from which a small amount of DNA was extracted and grown in a culture to expand its quantity. The result was a match with a probability of almost 99 percent. Maples concluded: "Taken in conjunction with the compelling physical skeletal evidence, the results are clear and unequivocal" (Maples 1994, 266–267).

As to Anastasia, prior to her death Anna Anderson had an operation, and the hospital had retained a tissue sample. Its DNA was compared first with a Romanov bone sample and did not match the profile expected for Anastasia. Next, the question of Anna's alleged real identity as a Polish factory worker named Franzisca Schanzkowska was considered; it was compared with that of a maternal grandnephew of Schanzkowska (a German named Carl Maucher) and yielded a positive match. This was proof that Anna Anderson was indeed the alleged Polish peasant and therefore not the lost Anastasia but an impostor (Gill 1995).

Final Secret

The matter of Anastasia's whereabouts remained unknown for the time being (but will be discussed presently). However, when I was invited to Moscow in 2001—to speak as part of a Center for Inquiry delegation before the Russian Academy of Sciences—it was Tsar Nicholas II himself who had become the subject of the latest obsession. About the time of his family's belated funeral in 1998, an icon that portrayed him was reportedly "weeping" fragrant oil on an almost daily basis in a Moscow Russian Orthodox church. No matter how suspicious it appeared, it nevertheless seemed to continue the Romanov narrative I had become so familiar with.

Indeed, I resolved to track down the lachrymose icon of Tsar Nicholas. Subsequently, Russian colleague Valerii Kuvakin and I made our way by bus and subway to one of the oldest districts in the city, where we found the onion-domed Church of Nikola in Pyzhakh. There we observed the usual proliferation of icons displayed on the iconostasis, a high screen separating the sanctuary from the nave in Orthodox churches (Russian, Greek, and others).

The icon had previously been on tour, and more than a dozen "healing miracles" were attributed to "the myrrhing image of our last tsar." Alas, the phenomenon was no longer occurring, and when I was able to get a look myself, I could see that it was merely a cheap facsimile. It had appeared at a time when there was a campaign to bestow sainthood on him and his family. However, the patriarch of the church, Alexy II, opposed the canonization, stating that the imperial family were underserving because of their poor leadership of both church and state. The "miracle" seemed an attempt to counter that view by faking a semblance of divine approval (Nickell 2002).

I have not learned whether the icon ever "wept" again, but a good opportunity would have been in 2007 when the last two of the eleven skeletons of those assassinated were finally brought to light. They were discovered in a separate grave site that was not far from the first. As a consequence: "All seven of the Romanovs have since been identified. They are all accounted for. None of them survived that night in Ekaterinburg. Russian, British, and American genetic testing all confirm this" (Lawhon 2018, 330). Not that anyone should care, but as I write this, I feel rather like weeping myself—for the Romanovs and the others, even the tragic Anna Anderson herself. ■

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[NOTES ON A STRANGE WORLD MASSIMO POLIDORO

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The Double-Edged Sword of Storytelling

Once upon a time, in a distant land, a dark evil force—led by a puppet master hiding his true nature behind an appearance of firmness and altruism—spread its terror. Only a small band of enlightened people, who saw beyond appearances, had the strength to rebel, trying to bring freedom back to the good people oppressed by the evil yoke.

Sure, broadly speaking it sounds like the plot of *Star Wars*, with the amiable Senator Palpatine, who is actually the evil Sith that will become the emperor, imposing his power over the universe through violence and terror. There too is the group of rebels led by Luke Skywalker, who seeks to turn the tide and eventually liberates the cosmos from the supreme evil. But it also resembles the story of Robin Hood and his companions who oppose the wicked Sheriff of Nottingham. It even recalls the plot of many of the countless Western movies of the past century, those where a clique of wealthy, powerful, and depraved landowners, with the complicity of a corrupt sheriff, hold the poor townspeople in check—until one or more brave heroes arrive to save everyone.

Well, what if instead of Palpatine, the Sheriff of Nottingham, or the corrupt landowners, there were the billionaires we've all come to know in the real world? And what if instead of the rebels, there were the many self-proclaimed "independent thinkers" who convince themselves on the internet that they have discovered conspiracies everywhere, confident deep down that they are fighting for the side of good? The story would still work, wouldn't it? Or, what if instead of Palpatine there were a corrupt president, opposed by another political party comprised of the only ones capable of seeing through the lies of someone who truly dreams of becoming emperor? The story would still work, right?

Of course they all work. And they work because they are stories that follow very well-known and worn paths of storytelling: heroes facing a great problem, an enemy, or an obstacle that seems insurmountable but is ultimately defeated, leading (usually) to a happy ending (see, for example, Campbell 1949). The act of telling stories has always fascinated and united our species. Or it has led it to divide.

Storytelling, then, is a crucial theme if we want to understand how and why people come to believe certain things while refusing to believe others. Jona-

Senator (Emperor) Palpatine.
Image credit: Yury Ledentsov | Shutterstock

than Gottschall, an English professor at Washington and Jefferson College in Pennsylvania and a scholar of narrative psychology, has addressed the role of stories in cementing societies or destroying them (Gottschall 2021). According to him, the starting point is ancient, dating back to Plato, who was the first to ask a question in his *Republic* that seems as radical today as it was 2,400 years ago: Is it possible that stories, even the greatest types of narrative—from Homeric epics to theatrical works to religious founding myths—do more harm than good?

A Trojan Horse

"Powerful storytellers," says Gottschall, "penetrate our brains and temporarily take control of our emotional and mental functions, deciding the images that enter our minds and the feelings that overwhelm us. And they often do so with a clear intention to exert influence in the short or long term" (Gottschall 2021). Of course, this does not mean that storytellers have sinister goals or should be blamed for their work, especially if they are so good at transporting us to a world or universe far, far away. However, it does mean that storytelling is a very powerful tool—one that is not only for entertainment, as advertisers and politicians are well-aware. Storytelling is the key to subtly implanting ideas, values, and purposes in others' minds, which, if presented explicitly for what they are, might at least be viewed with suspicion.

The tale of the Trojan horse is, according to Gottschall, a perfect metaphor for the power of stories, a metaphor we should always remember. We all know how the Greeks, exhausted after ten years of fruitless siege, decided to defeat the Trojans by exploiting the cunning of Odysseus. They pretended to leave but actually put soldiers in the belly of a giant wooden horse, which they left on the abandoned battlefield. The Trojans found it and, struck by its beauty, brought it inside the city walls. During the night, the Greeks emerged from the horse, opened the city gates, and let in the rest of the army, which would ultimately destroy Troy. But one wonders: Who could be so easily deceived?

Image credit: Arthit Kaeoratanapattama | Shutterstock

Virgil, Rome's greatest poet, recognized this weak point in the story and, in his version in the *Aeneid*, decided that the deception of the Trojans was not due to the horse itself but to a narrator, Sinon, left by the Greeks in Troy to explain the meaning of the horse. As the sole survivor, Sinon is captured by the Trojans, who are lulled by the power of his tale. He claims to be the sacrificial victim the Greeks had decided to offer to the gods before departing. Odysseus had chosen him because of an old grudge. But he escaped before being killed, and now the Trojans have saved him. Full of hatred for his former friends, Sinon seeks revenge and claims that the Greeks built the wooden horse as an offering to Athena; if the Trojans destroy it, they might unleash the goddess's wrath upon the city. Hence, bringing the sacred offering inside the walls was an effort to win divine favor.

Gottschall explains:

> More than the Trojan horse itself, it was Sinon's story and his skillful way of telling it that caused the city's downfall. … The Trojan horse is a metaphor for the potential and swift transformation of stories into deadly weapons, something that scam artists, propagandists, fake news creators, cult leaders, snake oil salesmen, conspiracy peddlers, and demagogues instinctively understand. (Gottschall 2021)

Gottschall's research may have its limitations, as pointed out by Yale historian Timothy Snyder (2021), but this kind of work helps us remember why social media can be so powerful in spreading lies and conspiracy theories: they tend to encourage narratives where we feel innocent and find others inhuman and, more often than not, end up trapping us in stories where we are always on the good side. And if our story is so good, how can we ever be wrong? ■

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[THE PHILOSOPHER'S CORNER

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Semi-Fake News: A Data-Driven Approach

We have all heard about fake news. But did you know that much misinformation, especially on social media, comes from what is better termed *semi-fake news*? Yeah, things are always more complicated than we first think. It turns out that 59 percent of fake news does not contain made-up content but rather misinformation arising from distortion of purely factual information. That is, semi-fake news is not put out by people (or bots) with a deliberate intention to mislead but by individuals who genuinely think the news is correct and useful, even though it is factually deficient.

Elena Musi and Chris Reed (2022) have conducted an empirical study on semi-fake news, its nature, and the role it plays in our contemporary, ever-evolving media ecosystem. Their results, as well as some of the positive suggestions they make, are well worth considering. They use what is known as *fallacy theory*, an approach to both formal and informal reasoning that goes back to the Greco-Romans. Modern philosophers have managed to develop a mapping of fallacy types onto classes of misinformation as well as on the various cognitive biases discovered and studied by psychologists. The emerging picture therefore connects logic, cognitive science, and media studies and provides useful tools for both skeptics and the public at large.

In particular, fake news can be conceptualized as items that *appear* as genuine news but are not, just like logical fallacies are arguments that *appear* to be valid (i.e., well-reasoned) and sound (i.e., based on true premises) but are not. Fake news has exploded with the advent of social media and what Musi and Reed refer to as the "Daily Me," the personalized information delivered to a user's laptop or phone, a clear instantiation of the cherry-picking fallacy. Moreover, the evidence clearly shows that when something goes viral over the internet it is largely because of the use of rhetorical devices—certainly not because of the soundness of the information it contains. Already twenty years ago, J.H. Woods (2004) described what he called "the gang of 18," that is eighteen basic logical fallacies that account for most of the mistakes and bad arguments that characterize flawed public discourse to this day. The invalidity of these informal fallacies is fuzzy, which parallels the fuzziness of semi-fake news and makes them difficult to recognize.

The phenomenon of fake news can perhaps be best understood as being characterized by a sliding scale along a continuum defined by two variables: *facticity* (or lack thereof) and *intention* (of the agent). An agent, that is, a distributor of news, may have malicious intentions, in which case the facticity of the corresponding "news" will likely be low. But the agent may also be honest in their beliefs, so that the facticity

of what is being disseminated may vary from low to relatively high, making it more difficult to single out problematic posts.

The proliferation of fake news in the digital era has triggered the countermeasure known as fact checking, which is increasingly done by large language model (LLM) types of artificial intelligence (AI). Many fact checking sites do acknowledge the notion of a continuum (say, from *mostly false* to *mostly true*) in the objects of their analyses but do not discriminate between the two underlying variables of facticity and intention. Moreover, "facts" are themselves not entirely independent of assumptions and theoretical frameworks, which makes it difficult for LLM AI to be effective, given how notoriously blind it is to nuance and context. (Not to mention that some philosophers have argued that LLMs are best characterized as bullshit generating machines [Hicks et al. 2024], though that's a conversation for another day.)

We are beginning to find interesting and useful regularities in the behavior of fake news thanks to an increasing amount of empirical research being carried out in the field. For example, it turns out that in terms of semantics, negative emotionally charged terms are statistically associated with deceitful messages. By contrast, at the discourse level the frequent use of rhetorical terms is statistically indicative of deception. But neither of these sets of indicators is typical of semi-fake news, because their authors do not have the intention to deceive but simply misinterpret or misrepresent content. This difference makes semi-fake news harder to recognize and potentially more dangerous, if unintentionally so.

Musi and Reed focused on a particular subset of fake and semi-fake news that spread during the COVID-19 pandemic. They analyzed the Snopes ratings of fact-checked news concerning COVID-19 through June 2020, for a total of 220 articles. They then quantitatively investigated the connection between various informal logical fallacies and types of misinformation.

They found that across types of media (blogs, digital broadcast, multichannel broadcast, scientific articles, and social media), evading the burden of proof was the most frequent fallacy (15 percent), followed by strawman (14 percent), and cherry picking (11 percent). When they zoomed into social media in particular, just four fallacies—hasty generalizations, cherry picking, red herring, and evading the burden of proof—characterized a whopping 80 percent of studied cases.

Sadly, broadcast media constitute close to 50 percent of the sources containing fallacies related to causal reasoning, such as confusing correlation and causation, with article titles being the main culprit, presumably because of the infamous problem of clickbait. The content of articles in reputable mainstream media is often factually correct (or at least sufficiently nuanced). But titles have to attract viewers and compete with a plethora of alternatives available to users, so editors are (consciously or unconsciously) rather unscrupulous and end up generating confusion in readers. Musi and Reed also found that the fallacy of ambiguity and vagueness is widespread across media sources, while in the case of broadcast outlets, the problem is again often the title of the article, for the same reasons discussed.

The authors of the study conclude that "human fact-checkers currently lack a systematic approach to classify and disguise misinformation; automatic fact-checkers are unable to identify misinformation due to the lack of suitable training data to feed their systems." So, what do we do then? As usual, the answer is as unglamorous as it is true: education.

One excellent example is the BBC's Evidence Toolkit (https://www.bbc.co.uk/teach/young-reporter/articles/z6v3hcw) developed by the Centre for Argument Technology at The University of Dundee in partnership with BBC Radio 4's Moral Maze program and BBC Young Reporter. It is an educational tool aimed at sixteen- to eighteen-years olds, though people of all ages would benefit from it. The goal is to improve critical thinking abilities by exploring a variety of news articles. The toolkit is made of three lessons: making claims, trustworthy news, and balanced news. Its learning outcomes include being able to recognize the main claim of a news article, distinguish fact from opinion, and understand that different types of reasoning can be critiqued in different ways.

Musi, Reed, and their coworkers also designed a Fake News Immunity Chatbot (https://fni.arg.tech/), which gamifies the problem of fake news in a rather entertaining way. When you start, you are greeted by a brief general introduction to fake news and to the three philosophers who will help you navigate the issue: Aristotle, the inventor of logic; Socrates, the (in)famous gadfly of ancient Athens; and Gorgias, one of the original Sophists and an expert on rhetoric.

Once you start playing the game, you will get one "gadfly" for every eight correct answers, on your way to becoming an expert in recognizing fallacious news. Before the game gets going, you will be asked to pick one of the collaborators to the project to interact with as a bot. Be patient; some of them get stuck on "thinking," and you may have to pick another one. Give it a try. It's fun, and even a seasoned skeptic will learn a thing or two. ■

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[BEHAVIOR & BELIEF STUART VYSE

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How Does the Ouija Board Work?

I have been writing about the discredited technique facilitated communication for several years, and to explain one of the mysteries of facilitated communication, I've tossed off the phrase "it is a Ouija-like phenomenon." I've also seen writers use the reverse formulation, describing the actions of Ouija board players as similar to facilitated communication. Recognizing that neither of these statements is a real explanation, I think it might be time to provide both a description of and an up-to-date explanation for the Ouija board phenomenon. You may be surprised to know there is a substantial amount of psychological research, both modern and classic, that bears on the case of the magic talking board.

Background

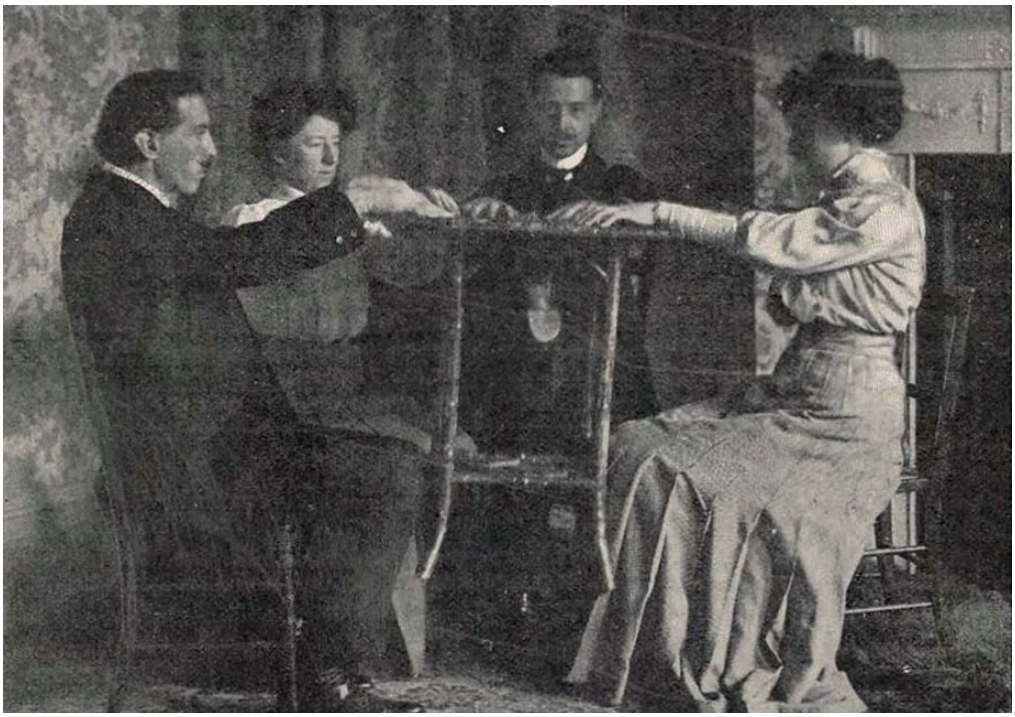
The beginnings of the Ouija board game go back to the Spiritualism movement of the nineteenth century. Several social forces came together to make the possibility of communication with the dead a reality for many people, and séances became wildly popular. The Fox sisters of Hydesville, New York, claimed to be able to communicate with a murdered traveling salesman through tapping sounds, and they toured the country demonstrating their remarkable mediumship. This was at a time when the average life expectancy worldwide was roughly half of what it is today, and approximately 30 percent of children did not live to see their fifth birthday. Then, in 1861 came the American Civil War, and suddenly almost everyone was touched by loss. Soon both professional and amateur mediums were conducting séances featuring tipping tables, knocking ghosts, flying musical instruments, disembodied voices, automatic writing, and many other methods of communicating with the dead (Vyse 2019). It was out of this background that someone figured out a way to make money by marketing a board that would allow anyone to communicate with spirits at home.

The identity of the inventor of the Ouija board is a disputed question, but we know that in 1891, Elijah J. Bond of Baltimore, Maryland, was awarded a patent for a "talking board," which he soon sold to William Fuld, who went on to make a fortune selling them (Hunt 1985). There is also some debate about where the name "Ouija" came from. For years, we were told the name was an amalgamation of *oui* and *ja*, the French and German words for *yes*. But according to Ouija board historian (who knew there was such a thing?) Robert Murch, the name came through the board itself when asked what it should be called (McRobbie 2013).

The Ouija board was and is quite literally a parlor game. The Spiritualist movement from which it came was largely conducted in the parlors of nineteenth- and early-twentieth-century homes. In a 1920 tax case, the Baltimore Talking Board Company argued otherwise: "[The Ouija board] is a form of amateur mediumship and not a game or sport. By means of this board one is enabled to get in touch with the other side." As a result, the company attorneys argued the board should be tax exempt (Hunt 1985, 6). The Internal Revenue Service took the opposing view, which the court found persuasive, and the company was obliged to pay taxes. But game or not, Ouija has an enduring following, and long after the Victorian spiritualist era ended, some people continued to believe that the board is a portal to a spirit world.

Until his death in 1995, the Pulitzer Prize–winning poet James Merrill lived three blocks from my current home in Stonington, Connecticut (I never met him). For decades in the 1980s and 1990s, Merrill and his partner, David Jackson, would sit at their milk glass dining table and communicate with what they believed were spirits of both famous and unknown deceased individuals. They each placed a hand on an overturned blue and white willowware tea cup that they used as a planchette or pointing device, and they copied out the messages they received. Many of these communications made their way into Merrill's poems, including the long epic *The Book of Ephraim*, which includes extensive dialogue attributed to a spirit of the same name who died on the island of Capri in 36 CE (Hammer 2015). Of course, this is not the only example of psychic inspiration in the literary world. Both the Irish poet William Butler Yeats (1865–1939) and the creator of Sherlock Holmes, Arthur Conan Doyle, published books based on their wives' automatic writing (Ludolph 2018).

I came across another example of strong contemporary belief about ten years ago when I used a Ouija board as part of a classroom project in a college psychology course. One student became very nervous and said her mother would not allow Ouija boards in their house because she believed they were evil. This kind of fear has been fueled by several horror films featuring Ouija boards, including the teen scream movies *Ouija* (2014), *Ouija: Origin of Evil* (2016), and *Paranormal Activity* (2007), as well



A 1910 magazine photo of magician William Marriott demonstrating how a séance table could be made to levitate by putting a foot underneath it (Wikimedia)

as the horror classic *The Exorcist* (1973). Although she was quite anxious about the activity, my student finally agreed to participate as long as she didn't have to touch the board.

The Ouija Phenomenon

1. The Ideomotor Effect

The more common reaction to the Ouija board is one of thrill and fascination. Although many nineteenth-century people paid good money to attend séances in a desperate attempt to hear from a departed loved one, others—perhaps even most séance attendees—probably considered it a spooky form of home entertainment in an era long before cable television or Netflix. Today, when pulled out at teen sleepovers or college dorm parties, the Ouija board game delights its users by removing their conscious sense of causation. With the hands of two people on the planchette, the pointer glides across the smooth surface of the board, often spelling out understandable answers to the questions posed. Given two or more willing players, the planchette seems to have a mind of its own. If the players had the conscious feeling of moving the planchette around to spell out the words, there would be nothing special going on. The success of the game derives from the breakdown of our sense of personal control.

The Ouija board is an example of *automatism*, in which we do something without the usual accompanying feeling that we are doing it. Automatism has been implicated in hypnosis, dowsing, automatic writing, and many other phenomena. How does this separation of feeling and action happen? Like the Ouija board itself, the earliest explanations of this spooky happening date back to the spiritualist era. From the beginning, there were people skeptical about spiritualism. The practice was rife with charlatans and frauds who faked their psychic happenings, and psychic researchers, including the American psychologist William James and magicians William Marriott and Harry Houdini, revealed many methods used to fake psychic events. But some of the actions of psychics appeared not to be deliberate or conscious.

British physician and physiologist William Benjamin Carpenter (1813–1885) was skeptical of the psychic beliefs that had recently become popular, but rather than debunking fraud, he was concerned with providing a non-supernatural explanation for some of the unusual happenings at séances. He proposed that humans have three kinds of reflex action, none of which involve the conscious will. *Excito-motor reflexes* are controlled by the spinal cord and are responsible for respiration and swallowing. Slightly higher up in processing are *sensory-motor reflexes* that control our surprise reaction to a loud noise. Finally, *ideomotor reflexes* involve the brain because they are stimulated by ideas and emotions, but they produce action without engaging the conscious will (Stock and Stock 2004). In his classic textbook *The Principles of Psychology*, William James credits Carpenter with having named the ideomotor effect and gives examples of mindlessly eating raisins and nuts when they are presented or automatically swatting away dust on his sleeve mid-conversation (James [1890] 1983, 1130–1131). He suggested that the ideomotor effect was at work whenever an idea is "unhesitatingly and immediately" followed by action: "We are then aware of nothing between the conception and the execution" (James [1890] 1983, 1130).

Carpenter investigated reports of "table talking," in which séance tables would answer questions by turning or tapping a leg. Other mediums employed wooden planchettes with caster wheels on the bottom and homemade letter boards placed on the table, much like our current Ouija board. Eventually, the planchette was sometimes fitted with a pencil so that messages could simply be written out on a blank page (see Figure 1). Carpenter's conclusion was that "Putting intentional deceit out of the question for the moment … the supposed communications are nothing else than products of their own automatic mental operations, guided by the principle of suggestion" (Carpenter 1888, 303).

Researchers went on to study ideomotor action in the laboratory, and some of the most dramatic examples were demonstrated at the University of Wisconsin by Polish-American psychologist Joseph Jastrow (1892). For example, Jas-

The author's Ouija game, including a board duplicating the original William Fuld copyrighted design, a plastic planchette, and a box demonstrating the proper manner of play. (Author's photo)

trow invented the *automatograph,* one of the wobbliest planchettes ever made, by mounting a plate of glass on a table, placing three polished brass balls on top of the plate, and then placing a second pane of glass on top of the brass balls (see Figure 2). Finally, a metal rod was attached to the top pane of glass with a stylus at one end that etched a record of any movements on a piece of smoked paper, making an *automatogram*. Jastrow reported that when the user placed their hand on the top plate of glass, it was very difficult to keep the contraption still for more than a few seconds. A large screen was placed between the participant and the automatograph so that they could not see its movements, and the participant was asked to hold it as still as possible.

The automatograph revealed several ideomotor effects. For example, when a participant was asked to think about the building next door to the laboratory—while attempting to hold the automatograph steady—his hand moved in the direction of the adjacent building. Another participant was asked to hide a knife somewhere in the laboratory, then think about the knife while trying to hold the automatograph still. In this case, the participant's hand moved in the direction of where the knife had been hidden. None of the participants felt these movements, because they were focused on trying to hold the automatograph still, so the implications for the movements of a conventional planchette in a Ouija board session were obvious. When movements are easy to make and have little resistance, the mere idea of a thing can allow us to do something—move the planchette toward "YES"—without the feeling that we are doing it. Classic nineteenth-century planchettes had wheels on the bottom, and the modern plastic ones have felt-tipped feet that slide easily across the surface of the board. But the ideomotor effect is not the only explanation for the magic of the Ouija board.

2. Action Projection

The ideomotor effect requires only one person. There was just one hand on Joseph Jastrow's automatograph when it went wandering off in the direction of a hidden knife. But the Ouija board and facilitated communication require two people, and most séances involve larger groups of people. Once there is more than one person involved in an action, the relationship between the feeling of doing something—the sense of authorship—and the action itself becomes confused. A person may be contributing to a movement of a tipping séance table but attribute their actions to one of the other people involved or a supernatural entity.

American psychologist Daniel Wegner (2018) called this "action projection," and the case of Clever Hans was one of the most dramatic examples. Clever Hans was a famous horse that, according to his trainer—retired Berlin mathematics teacher Wilhelm von Olsten—could think and calculate. When Hans was asked a question, such as what is two-fifths plus one-half, he would tap out the answer nine-tenths with his hoof by first tapping the numerator, followed by the denominator (Heinzen et al. 2015, 13). Clever Hans became enormously famous, and although he was offered large sums of money, von

Figure 1. The underside of an early (ca. 1850–1860) British planchette showing caster wheels at the bottom and a hole for mounting a pencil at the top. (Wikimedia)

Olsten never accepted payment for his performances. Many experts believed Hans had genuine intellectual ability, but that all changed when psychologist Oscar Pfungst began to perform systematic tests and discovered that Hans was responding to unconscious cues from his trainer. Pfungst determined that Hans got the right answer only when the questioner knew the answer to the problem and the horse could see the questioner. He concluded that as Hans approached the correct number of taps, the questioner would make some unconscious gesture or movement that prompted the horse to stop. Hans was indeed a clever horse, just not clever in the manner advertised, and the relationship between questioner and student in the Clever Hans case is a classic example of action projection.

A current and very troubling example of action projection is facilitated communication, the bogus communication method often used with nonspeaking autistic people I have often written about in this magazine (see my article in this issue and Vyse 2020; 2018). In this case, a facilitator or "communication partner" holds the hand of the nonspeaking person with severe autism as they type on a keyboard. Research has shown that the communications are being controlled by the facilitator and not the nonspeaking person, but a cu-

rious aspect of this method is that the facilitators seem to be completely unaware that they are the authors of the typing. Due to the confusion caused by two people acting together, it is possible for the facilitators to project their actions onto the nonspeaking person. In the case of the Ouija board, the supernatural aura surrounding the activity encourages projecting the players' actions onto a third entity—the spirits.

3. Planning and Predicting Action

Daniel Wegner (2018) proposed a general theory of how the feeling of control is generated. He suggested that there is an action planning phase prior to the act, and if, after the action takes place, it produces an effect that is consistent with the plan, then the person will experience a sense of agency, of having performed the act. In addition, Wegner proposed that the sense of control is strengthened by *exclusivity*, meaning that if there is no one else around, you must have been the one who performed the action. Both the Ouija board and facilitated communication disrupt the sense of control by violating this exclusivity principle and introducing another actor.

If you watch people using a Ouija board, you notice they are intently looking at the board. In a classic *National Geographic* episode, Mark Edward showed that blindfolded Ouija board users produce gibberish, which seems to contradict the view that spirits are controlling the messages.[1] In a field study conducted at a paranormal conference, a group of Danish and German researchers used the eye-movements of Ouija board players to demonstrate how the inability to make accurate predictions about an action may also diminish the sense of control (Andersen et al. 2018).

The researchers gave pairs of conference attendees glasses fitted with tiny cameras to wear and set them to work at a Ouija board (see Figure 3). The cameras were connected to a computer that recorded where each player was looking on the board. As a result, it was possible to determine whether the spots on the board where each player was looking predicted where the planchette would go next. In what they called the "voluntary condition," the researchers asked the participants (who were all American) to simply spell out the word *Baltimore*. In a separate condition, the participants were asked to play Ouija in the normal way, asking the board whatever questions they wished. As you might imagine, in the voluntary condition, the eye movements fairly accurately predicted where the planchette would go. For example, prior to moving the planchette to "B," the players would look at B on the letter board. Also, as one might imagine, in the Ouija condition, the players' eye movements were much less accurate predictors of where the planchette would go; however, as more and more letters were spelled out, the players' eye movements became more accurate predictors. The researchers concluded that part of what creates a lower sense of having moved the planchette oneself may be the reduced ability to predict the next letter during typical Ouija play. In addition, they concluded that the production of meaningful responses during Ouija play comes from the experience of working with a partner and becoming better at predicting upcoming letters over time. After many nights over several decades, poet James Merrill and his partner, David Jackson, must have been very good at predicting each other's movements.

4. Prior Belief

After the paranormal conferencegoers in the eye-movement study had completed their Ouija board play, the researchers asked them several questions, and the results were strongly affected by whether the person believed in the Ouija board or not. People who agreed with the statement, "The Ouija board can be used to contact entities such as spirits, ghost, demons, angels, etc." were also likely to say that, in the Ouija condition, the planchette moved on its own without assistance from either player. In contrast, participants who agreed with the statement, "The Ouija board is really driven by the subconscious mind of its users (i.e. the ideomotor effect)," typically said that their partner and, to a lesser extent, they were moving the planchette (Andersen et al. 2018, 9–10).

The differences based on faith in the Ouija board were some of the most powerful findings in the study, demonstrating once again how strongly our prior beliefs about a situation can color

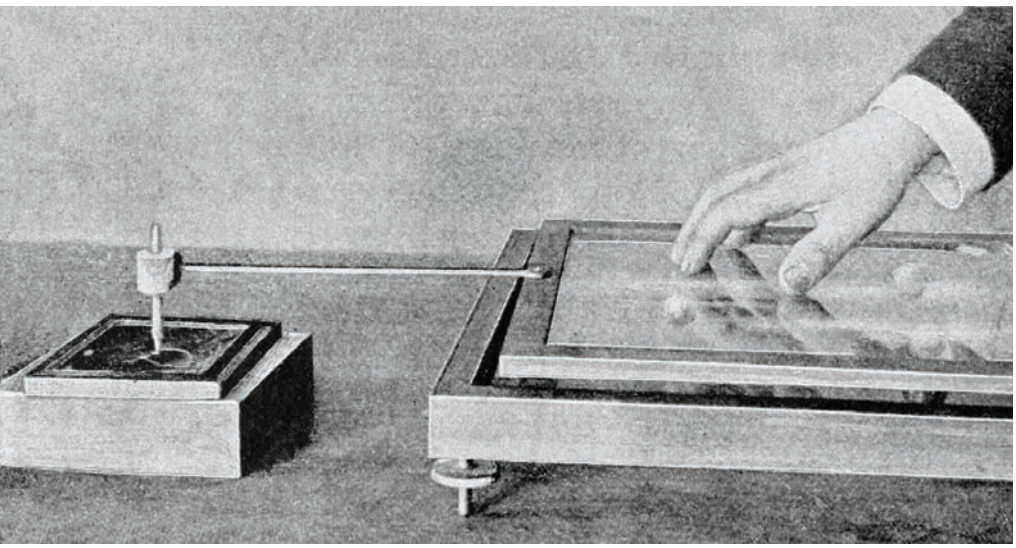


Figure 2. Joseph Jastrow's automatograph. Three polished brass balls were placed between two plates of glass, and the participant was asked to try to keep the top plate as still as possible. The stylus at the left recorded any movement of the top plate of glass. (Wikimedia)

1. In his 1888 book, William Carpenter reported that when he asked a medium to close her eyes while using a planchette, she refused, saying such an experiment would show a "want of faith." Carpenter then asked the medium to ask the spirits whether she might close her eyes, and the planchette said "NO." Finally, Carpenter asked the medium to ask why the spirits said no, and the planchette spelled out "WANT OF FAITH" (Carpenter 1888, 305).

what we see—or, in this case, what we feel. Once you are committed to a belief, confirmation bias and motivated reasoning can set it. Almost anything that happens can be rationalized to support your prior beliefs.

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The Ouija board has had a remarkable run. Born from spiritualist beliefs that are almost 200 years old, it has sold as a game for over 125 years. It continues to captivate kids and adults and inspire horror films. Most of us know that spirits, ghosts, and demons don't exist, but something about the Ouija board has sustained its popularity for all this time. It isn't supernatural, but the psychology of the arrangement promotes belief and amusement. Although the Ouija board is just a game, many of the same forces that have sustained its popularity are at work in facilitated communication, a far more dangerous delusion (Vyse 2024). As a result, the researchers, both classical and contemporary, who've revealed the natural phenomena that promote these supernatural beliefs have done us a great service. ■

Clever Hans performing in 1904 (Wikimedia)

Figure 3. The experimental setup for the Andersen et al. (2018) eye tracking study of Ouija board players. The players wore glasses containing cameras that allowed the researchers to see what each player was looking at. From Andersen et al. 2018.

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[THE PRACTICAL SKEPTIC MICK WEST

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Psychics and Demons at the Pentagon

A depiction of psychics and demons at the Pentagon by Microsoft Designer's **[Ai]** Tool

Luis Elizondo's book *Imminent*, published in August 2024, marks an inflection point in the modern UFO era. That era began in 2017 with two events: the publication of an article in *The New York Times* (Cooper et al. 2017) and the launch of the To The Stars Academy (TTSA), a UFO-studying organization founded by middle-aged rocker Tom DeLonge.

Elizondo was at the heart of those two events. The *New York Times* story revolved around him telling the story of a Pentagon UFO investigation office called Advanced Aerospace Threat Identification Program (AATIP), of which Elizondo was supposedly the head. Reportedly dissatisfied with the attitude of the Pentagon regarding UFOs (their funding, according to the *Times*, ran out in 2012), Elizondo left the military and went to work for DeLonge.

DeLonge, a longtime UFO aficionado, launched TTSA on October 11, 2017, with a live presentation. On the stage were some people well-known to skeptics of UFOlogy, including Hal Puthoff—an alternative scientist whom Martin Gardner was critiquing in these pages over twenty-five years ago (Gardner 1998). Elizondo was very much a newcomer on the scene and gave a short speech about how he thought "the phenomenon was real."

Over the next seven years, Elizondo would become one of the most famous figures in the world of UFOs. This fame came largely on the back of the *Times* story, which established UFOs as a topic worthy of journalism. Elizondo's government work was a large part of the justification. He starred in a History Channel TV show called *Unidentified: Inside America's UFO Investigation*—loosely based on his work at the Pentagon in an "official" investigation of possible alien craft. He became a fixture on UFO podcasts.

Nuts and Bolts

From the start, the promoters of this new narrative were cautious, sticking to the "nuts-and-bolts approach" to UFOs:

What were those strange lights in the sky? How did they move? What might the physics behind them be? How might aliens have traveled here from other worlds?

Topics to be avoided included recovered alien bodies, communication with aliens via telepathy, alien abductions and implants, time travel, the nature of reality, remote viewing, and the future of humanity in an alien-populated universe.

Elizondo initially stuck to the nuts and bolts. When I interviewed him, the discussion largely focused on his recent history with UFO investigations at the Pentagon and the straightforward analysis of videos (West and Elizondo 2021).

This approach held for several years, but there were occasional unverified stories about Elizondo doing remote viewing (seeing far-off things using the power of his mind) or even psychically predicting a person's future. Despite this, he largely remained on the nuts-and-bolts side of things.

That is, until he wrote his 2024 book.

Psychic Torture

Elizondo served at Guantanamo Bay—the U.S. base in Cuba that housed suspected terrorists after the September 11, 2001, attacks. Often held without due legal process, these prisoners were subject to what were at the time called "enhanced interrogation techniques." According to his book, Elizondo was quite a big part of that, writing:

> An attorney for one of the 9/11 suspects labeled me in open court as the "US Czar of Torture." From that moment, I would forever be branded by some as the nation's Darth Vader. At one point I was informed that Europe had issued an open arrest warrant for me. … From my perspective, I was serving my country and my president, and preventing another 9/11.

This alone will give many people pause. Torture is morally reprehensible. Its only defense is that the pain of one person might prevent the death of many. But that defense does not actually work; torture is widely considered an ineffective pseudoscience likely to elicit false information, and the CIA admitted they have never gotten any actionable intelligence from its use.

But there's a curious crossover. In chapter 3 of *Imminent* ("A Reluctant Warrior"), Elizondo describes how he was trained by the U.S. military in remote viewing. This is the same program that was portrayed in the film *The Men Who Stare at Goats*, starring George Clooney.

The real-world program was called Project Stargate and involved Hal Puthoff. Elizondo described the program as something that unquestionably worked—although it's even more pseudoscientific than torture. He claims that a senior officer from that program, Eugene Lessman, selected him to become part of a "secret Army" of "psychic spies."

Elizondo claims that remote viewing

Still from *The Men Who Stare at Goats*. Image credit: Netflix

became "second nature" to him and that he even used it to save the lives of his men from a roadside bomb.

Then there's the intersection with torture. Elizondo relates how, on one occasion, he met with four other remote viewers for lunch, and they decided to try to shake up a terrorist using the power of their minds—and the terrorist was thousands of miles away!

They "directed our conjoined thoughts towards a specific terrorist in his cell." They later learned that it had worked; the terrorist felt his bed violently shake and was terrified to see the five figures standing over him bathed in white light like avenging angels.

Orbs in His House

Orbs has several meanings in UFOlogy. The most straightforward is a generic description for phenomena such as lights in the sky that are interpreted as spherical flying objects. They are also a commonly mistaken artifact of flash photography when out-of-focus specks of dust or water turn into ghostly "orbs" that people misinterpret in various ways.

But perhaps the most esoteric version of an orb is the glowing balls of light people have reported seeing inside their own homes. Elizondo gave a detailed account of orbs around his house, seen by both himself and his family:

> I never had any interaction with orbs until I started working with the program. … We had a long main hallway in the house, and one evening a green, glowing ball, probably about the size of a basketball, with soft edges that weren't defined, floated down slowly from the kitchen to our bedroom door just below ceiling height, then disappeared into a wall.

He goes on to describe how these glowing, hovering basketball-sized objects were seen by himself, his wife, and his children. They saw one every month or so, and they were common enough outdoors that even neighbors became so accustomed to seeing them around his house they made jokes about them.

Unfortunately, none of this extensive supernatural activity was caught on camera, and we do not have independent witnesses, so it's hard to take it seriously.

In a particularly bizarre section, Elizondo recounts how orbs had caused "severe biological effects resulting in life-threatening medical issues." This included not only members of his team but also their children. Some people died from those effects. But because his orbs were a different color, he decided not to frighten his family by telling them this.

Personally, if potentially killer orbs were floating around my house, I'd be a bit more concerned!

Demons

Chapter 8 of *Imminent* is titled "Angels or Demons," and Elizondo takes on a more skeptical perspective. He starts out describing a group of Christian fundamentalists who reportedly shaped policy within the Department of Defense based on their religious beliefs.

To his credit, Elizondo expresses great concern about this. He was spiritual but not particularly religious and had also seen the negative effects of fundamentalist religion in his anti-terrorism work overseas. He found "the same sort of rigid mindset shaping policy in the U.S. [and it] disheartened me, to say the least."

This mindset was clearly revealed to him by someone he considered an "unofficial mentor" when he was working at the Office of the Director of National Intelligence (ODNI). That person, whom he refers to as "Devon Woods," was originally quite supportive. But for initially unclear reasons, Woods started to question Elizondo's work on UFOs, even involving the CIA.

This culminated in a tense meeting with Woods, in which his usually friendly mentor took a stern tone and told Elizondo that they already knew what "these things" (UFOs) were and that he was opening a can of worms with the investigation. He asked if Elizondo had read his Bible. Elizondo was perplexed, so Woods explained: "'It's demonic,' he said 'There is no reason we should be looking into this. We already know what they are and where they come from. They are deceivers. Demons.'"

I'm glad Elizondo has highlighted this issue. We don't want people making policy based on unfounded religious beliefs—but then we also don't want them making policy based on unfounded beliefs about aliens. Woods, no doubt, considers his belief well-founded. Unfortunately, so does Elizondo, and later in the chapter, he flips the script. Where Woods thinks that UFOs are demons and angels, Elizondo thinks that demons and angels are UFOs and aliens, asking in chapter 5: "Are these [biblical] stories merely instructive, or are they feeble attempts by humans to reconcile their bewilderment over seeing otherworldly technology?"

UFO Videos

When the Pentagon's All-Domain Anomaly Resolution Office (AARO) released its UFO report, UFOlogists were quick to point out a long list of mistakes. Elizondo joined in that criticism, but his own book has numerous errors, particularly around the more famous UFO videos and incidents.

In the well-known Nimitz Tic-Tac incident, Elizondo places one witness, Jim Slaight, in the back seat of the plane of the main witness, David Fravor. In fact, he was in another plane entirely, several thousand feet above Fravor. Because the Tic-Tac encounter was entirely eyewitness accounts, knowing who was where is of fundamental importance.

There are other mistakes as well; in the Gimbal case (a still frame of which appears on the cover of Elizondo's book), he explains in detail how it appeared cold in infrared when, in fact, it was hot. He then goes on to say it was hot, but the air around it was cold—but what he's indicating has been shown to be a camera artifact, and cold air would not be visible at that distance. He says the camera "pulls into better resolution" when the resolution did not change. He dismisses the proven parallax explanation in GoFast simply because the pilots thought it was going fast. (For more on these videos, see "Great Expectations: House Hearing on UAP Excites Fans, Offers Little Else" in the September/October 2022 Skeptical Inquirer.) These mistakes are every bit as bad as

those from AARO, but UFOlogy has not levied the same criticism.

Eternally Imminent

When the title of Elizondo's book was first leaked on the internet a few months ago, I initially thought someone was making a joke. UFO disclosure is what he claims is "imminent" in the book. The problem is that UFO disclosure has been "imminent" since 1950, as described in Donald Keyhoe's book *The Flying Saucers Are Real*. Keyhoe wrote, "It has been a complicated jigsaw puzzle. Only by seeing all parts of this intricate picture can you begin to glimpse the reasons for this stubbornly hidden secret. The official explanation may be *imminent*. When it is finally revealed, I believe the elaborate preparation—even the wide deceit involved—will be fully justified in the minds of the American people" (Keyhoe 1950; emphasis added).

Since then, every generation of UFOlogists feels like *they* are the ones who are about to see the government finally admit that aliens are visiting—much like how every generation of Christians hopes to be the one to witness the second coming of Christ. That's been going on for 2,000 years. UFOlogy has only seventy-four years of disappointment, but there are likely many more to come.

This book marks an inflection point in UFOlogy, not because it ushers in disclosure but because it rips the curtain off the "nuts and bolts" of UFO research and reveals the bizarre world of psychic powers and supernatural woo that has always been the carefully hidden foundation of the topic.

As Garry Nolan, another UFOlogist, once said: "Everybody involved [in UFOlogy] knows it's not just the nuts and bolts, and yet we are being careful not to dance too far over that line. Because it will scare the bejesus out of people if it gets too deep into the woo. Yet all of us know the woo is just around the corner" (Nolan 2023).

With Elizondo's book, that line has been crossed. The woo is on full display. What remains to be seen is who will embrace the woo and who will follow science. ■

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The Berkshire UFO Abduction Incident

Q: **What do you make of the Berkshire, Massachusetts, UFO case? Hundreds of eyewitnesses saw a UFO, and several were abducted. What could possibly be a skeptical explanation?**

—Danny B.

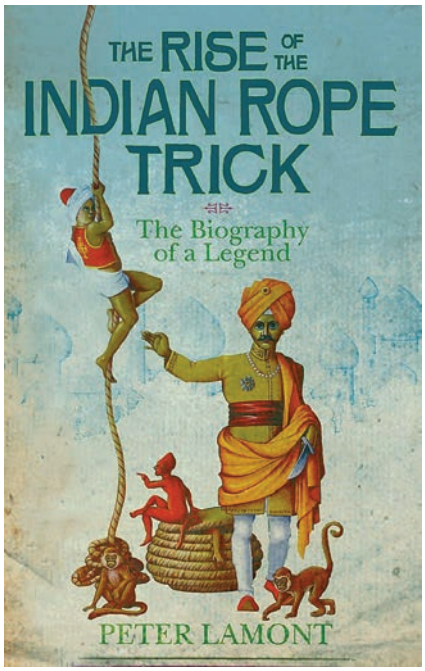
A: I was asked by a producer for the BBC show *Uncanny USA* to research the curious case of the 1969 Berkshire UFO incident. Though I've researched many famous UFO cases, I was not familiar with this incident, which seemed very odd.

As with the "true story" behind *The Entity* ghost case that Kenny Biddle and I investigated (see the November/December 2021 SI), the Berkshire UFO case seemed to have been largely overlooked, even by UFO believers. If the evidence was as strong and overwhelming as claimed, you'd think that believers would tout it every chance they got. Why rehash shifting and sketchy Roswell claims for the hundredth time when you can stump skeptics with the rock-solid Berkshire incident?

The mystery deepened when I consulted my bookshelves; there was very little on the case. There was an episode of *Unsolved Mysteries* available on Netflix, which I watched and took notes on. A quick online search yielded little in the way of critical commentary, with one notable exception: Brian Dunning's *Skeptoid* podcast. It offered a helpful overview, and Dunning had the same initial reaction I did: "Oddly, if you're a fan of UFOlogy, it's very likely a story you'd never heard before. How can a story be at once notable enough

to attract the attention of a major TV network, and at the same time be so virtually unknown that it's slipped through the cracks of most of the UFO literature?" Perhaps because of this dearth of information, the BBC producer provided me with nearly fifty pages of transcripts from recent interviews.

The case is complex with many tangled tangents and tendrils, but the basics can be summarized as follows: On the last evening of the Labor Day holiday in 1969, in Berkshire County, Massachusetts, hundreds of people reported seeing bright, flying objects, and at least a dozen were present when three children were taken up into spacecraft. The case has many of the classic aspects of an alien abduction story, including missing time and recovered memories.[1]



Illusion of Corroboration

Part of the reason it's such a *prima facie* compelling case is the huge number of alleged eyewitnesses seems to rule out misperception. Sure, one or two people might be confused, stoned, or hallucinating, but not so many people at one time. This premise, while logical and plausible, has limitations, especially when extraordinary claims are involved. In many cases, what we have is merely the *illusion of corroboration*. One classic example is the Indian rope trick, which was claimed to have been personally seen by hundreds or thousands of people yet clearly was not (see Peter Lamont's excellent book *The Rise and Fall of the Indian Rope Trick*). The famous Catholic miracles of Fatima (see Nickell 2009 and Radford 2019) are another example, and there's also my investigation into the haunted KiMo Theatre, in which claims of hundreds of firsthand eyewitnesses to alleged poltergeist activity were categorically debunked (see Radford 2014). A different but related phenomenon, the Mandela effect, was the subject of Mick West's recent column in the September/October 2024 SI. In short: yes, it is quite possible for multiple seemingly independent and intelligent people to come to the same mistaken conclusion.

Despite the alleged deluge of eyewitnesses, by far the most dramatic and detailed accounts come from only three people: Thom Reed, Tom Warner, and Melanie Kirchdorfer.

Thom Reed described crossing a bridge with his family when they spotted a bright glowing orb larger than 100 yards in diameter. They tried to escape, but their vehicle stopped after being bathed in bright light. He was taken up into the craft where, he said, aliens that looked like giant insects or ants examined him. He was then placed back into the vehicle as if nothing had happened, though notably his mother and grandmother had mysteriously switched seats (much was made of this in the BBC show).

Though that version of his story is common, in recent interviews Reed (2024) states that it's incorrect in several important ways. For one thing, he saw three different glowing objects, not just one.

> I saw a large white sphere, like a cue ball putting out a very little bit of a tint of light and it was almost eye level out the window before it started to rise up. It wasn't an airplane. It wasn't a balloon. This thing had fired like white blasts of light from the side of it into the water. So for about three seconds or so, it actually looked like a vanilla ice cream cone. I mean it was massive, a hundred yards in length. … It was just hovering there and we sat there looking at it for the longest time.

Then he heard a tapping sound and lost consciousness. He woke up "in this big, open area that was much bigger than the crafts [he had just seen]. It was definitely a military type of thing. We were not in the craft. You could fit the craft in the area that I was standing alone. That's how big this area was." He was then taken to a room where he "saw some off-world beings. These were very odd-looking creatures that had a head like a football. There were two of them that faced the wall, looking at a chart or something." He was then examined, drifted in and out of consciousness, and woke up back in the car. That's when he knew that it wasn't all just a dream or hallucination, because his mother and grandmother were not seated where they had been.

Even though his account is routinely characterized as an alien abduction, Reed is adamant that he was *not* in fact abducted by aliens that night:

> No, of course not. I never said I was. We were taken from the car by human beings, by government. When we returned to the station wagon, my grandmother and mother were reversed and the ignition was off. So ask yourself, does another species bother to turn the ignition off to save the car gasoline and battery? No. Someone turned that ignition off on our car, literally reached in and turned it off. That was no alien species or extraterrestrials going to care if our Bel Air station wagon is running or not! (Reed 2024)

1. One recurring problem that plagues paranormal research is the tendency to lump disparate—and often unrelated—phenomena together. This often happens in cases involving ghosts, conspiracies, and curses, for example, when people will assume (without clear logical reason) that events are related. A sudden headache or accident on a ghost hunting trip is attributed to a spirit or curse, violating Occam's razor and committing a *post hoc ergo propter hoc* fallacy. In this case, proponents assume that whatever lights or objects one person saw in one place at one time must be the same thing someone else saw later in a different place under different circumstances, even if the descriptions don't match. That may or may not be true, but investigators should be careful about making that leap.

Whatever Reed may or may not have experienced that night, it seems that no others confirmed his account; it's not unreasonable to think that someone living, walking, or driving nearby might have also seen the huge glowing spaceships hovering in the sky that holiday weekend, but apparently no one did.

A second boy, Tom Warner, gave a curious and confused account in which he related suddenly hearing voices in his head while visiting a neighbor's home. Ten years old at the time, he heard a male human voice tell him, "You have to go home." He told his hostess that he needed to follow the commandment: "I looked at Debbie, 'Debbie, I have to go home.' She goes, 'why?' I said, 'I don't know. Maybe God's calling me through those clouds. I don't know.'" He grew panicked and ran out of the house when "all of a sudden, all the sounds disappeared completely. I'm not hearing anything" (Warner 2024). He said, "I'm running but I'm not moving. And at that moment, my arms jerk back and I'm looking up and there's a UFO right over my head. And I'm seeing colors that I've never seen before." He was beamed aboard a circular silvery bronze spacecraft where a female alien communicated with him telepathically. He also heard screams of children and saw one girl who he (retroactively) identified as Melanie Kirchdorfer.

"Then I saw a human, they weren't from Earth, but they were human," who told him through telepathy that "We'll be back." He was told "We'll be done in a minute," then the aliens kindly updated him on their progress by saying, "We're done." Just then, "right at that precise moment, the beam goes off and I rolled to my right and I stand up [in the yard]. And I'm looking at this UFO and now I'm really taking it in like all the details. And it slowly rose to clear the yard and boom, it was gone in a flash." The whole experience, he said, lasted seven to nine minutes. He reports that at least three eyewitnesses, including his brother, who was about twenty feet away, watched him appear and disappear inside the light beam.

Melanie Kirchdorfer, the third allegedly abducted child, describes being in a parked car by Mansfield Lake, a few miles away from the other incidents, with her parents and sister. Crowds had gathered there for the Labor Day weekend, and the festivities were interrupted by a UFO that appeared in a flash of light (Kirchdorfer 2024). Amid the panic, Kirchdorfer lost consciousness and, she says, levitated into the spaceship. There she was kept in an examination room and saw other children on the craft. The next thing she remembers is waking up alone on the lake shore late that night (or very early the next morning) and walking home.

Arial view of the Thom Reed UFO Monument Park. Image credit: MayorBatman | Wikipedia.

The Repeaters and the Repressed

A closer look at the three kids is revealing. Even if we accept Kirchdorfer's account at face value, it's clear that we're not getting the whole story. Most obviously, it completely neglects the most important eyewitnesses: her family. By her account, there were at least three others in the car with her. Where is *their* testimony? What do *they* say happened? Do they corroborate or contradict her account? Did her parents report her abduction to police or organize any searches? Were they asleep back at their home when she awoke alone on the shore? There is little or no mention of them in the accounts or television show.

For that matter, there were dozens of other people at the lake who were presumably watching in awe and alarm and perhaps even reaching for cameras. Where are *their* stories and photos? If they support her claim, why haven't they come forward? If, instead, their collective conspicuous silence indicates that the event didn't happen—or at least not as she claimed it did—why should we privilege her eyewitness testimony over theirs? She was, by her own account, drifting in and out of consciousness (which begs the question of how accurate and reliable her memory is). You

can't have it both ways. Having many firsthand eyewitnesses strengthens the case—except when they contradict (or are silent about) your key eyewitnesses. Either we should believe the "hundreds" of eyewitnesses, or we shouldn't.

It's significant that most of Kirchdorfer's memories about her alien abduction were elicited retroactively and through recovered memories—a deeply flawed technique known to be responsible for many false claims, ranging from reincarnation to alien abductions. This fact alone calls her recollections into question; true memory, suggestion, and confabulation can be indistinguishable.

There's also the fact that both Tom Warner and Thom Reed had previously reported UFO experiences as children. Indeed, Dunning notes a detail often left out of accounts of the case: Reed is a repeater; he claims to have been abducted by aliens at least twice before the Berkshire event: "Thomas Reed and his younger brother Matthew encountered the UFOs in previous years. In 1966, three years before the Berkshire mass event, the brothers saw lights and figures in their house before being led into the woods and beamed into a UFO. In 1967, the boys saw the lights, heard doors in their house slamming, and awoke near their driveway after another trip inside the UFO" (Smith 2020).

Whether a person who claims to repeatedly see ghosts, Bigfoot, or aliens is more or less credible than a person who only claims to have seen them once is perhaps debatable, but of course most people (arguably, everyone) go through life without seeing a single Bigfoot or extraterrestrial. One explanation is that they are simply extraordinarily lucky (or unlucky); another is that they are "special" and have been chosen by the otherworldly entities to reveal themselves to and establish communication. Another explanation—this one well grounded in psychology—is simply that the repeated experiences are the result of priming; after the first experience, they consciously and unconsciously interpret future experiences through that lens. If you believe you have been abducted by aliens in your bedroom while alone at night, then you're more likely to settle on that interpretation months or years later if you have a similar strange dream or experience.

Where's the Beef?

All this would be less problematic if there were a surfeit of corroborating evidence. Yet there's absolutely no evidence at all. Despite extensive research, not a single police report has been found about the child abductions, UFOs, strange lights, or anything else from that weekend. Even more damning, the local newspaper, the *Berkshire Eagle*, has no mention of any of it either; there's coverage of the parade and celebrations, but the child-abducting UFO invasion apparently didn't merit a mention. There's simply no record of any of it ever happening.

If the eyewitness accounts are substantially true as told, the complete lack of independent corroboration and evidence is perhaps the most astonishing aspect of the incident. How is it possible that not a single photograph or film recording exists of it? It was a Labor Day weekend holiday. Handheld consumer cameras were common in 1969—in fact, they had been around for decades—and many photos were taken that day (some appear in the *Unsolved Mysteries* episode). How, exactly, is it that hundreds of people saw these unexplained, unearthly lights above and around this small town (not to mention kids being pulled up into glowing spaceships) yet not a single person took a photo?

Occam's razor suggests there are no photographs of UFOs taken that day because there were no UFOs to photograph, and there are no recorded reports of UFOs that day because no UFOs were seen or reported—not because Men in Black threatened the entire town or erased their memories, or the entire police force and newspaper staff was enlisted to cover it up, or any other reason. Allegedly, calls were made to the radio station about the alien invasion, but once again a search of the archives came up empty. Whatever *ad hoc* excuses might be mustered for the complete lack of police and media reports, they can't explain why no one has produced any personal journals or diaries at the time describing the UFOs and abductions. While not as evidentially significant as a formal police or news report, an authenticated private diary entry from the time could be strong evidence that *something* unusual happened ("Dear Diary, the strange lights that the whole town has been buzzing about since Monday seem to be gone, and thankfully Tom and Melanie report no ill effects from the alien examinations they endured. My grades slipped a little this semester, but the new puppy is a delight …").

Warner says that his family, who witnessed at least some of the incident, agreed that no one would speak of it. In fact, all three insist that there was a tacit—though at times explicit—agreement not to talk about what had happened to them and their town. But there doesn't seem to be any reports for the previous half-century. If Reed is right and he was abducted not by aliens but instead by a phalanx of government agents (who may or may not have been working with the aliens but somehow transported him to some huge, hidden military base), how was that accomplished in total secrecy in a small rural town over Labor Day weekend? How could anyone failed to have noticed their presence?

Conclusion

In fact, not only are there no contemporaneous reports about the incident, but it seems that the incident may not have happened in 1969 but instead nearly fifty years later in 2018. That's when the stories first emerged, when Warner and Kirchdorfer discussed it for the show *Unsolved Mysteries*. According to Warner, he and Kirchdorfer first met—aside from, allegedly, inside the UFO—in 2018: "I went to a grocery store and Melanie was there and I just said, hello … and somehow we connected on Facebook. Then I said, can I give you a call, there's something I have to tell you. And then I told her [my experiences] and you know, she was traumatized by the whole thing too." According to Dunning, Reed is the only person involved to have spoken about the incident prior to the *Unsolved Mysteries*[2] episode.

The Berkshire UFO case is indeed

a strange one but can be explained through psychology, Occam's razor, and the process of elimination. The evidence doesn't suggest that it's a hoax—nor does it suggest that anyone was abducted by UFOs. In the end, skeptics don't need to explain why 250 people saw something out of this world, because it's not clear that—despite breathless, widespread claims to the contrary—they did see anything unusual. We only need to explain why a few people did. And that's easier to explain if you understand the nature of memory. Memories are a reconstructive, iterative process, and people are easily influenced by one another through suggestion, false memories, and so on. Many of the children's experiences, especially Kirchdorfer's, closely resemble sleep paralysis, hypnagogia, and hypnopompic hallucinations.

Dunning (2020) offers his take:

> And over those years, a few people trying to make sense of their own memorable events recalled Thom's stories, and their pattern-seeking brains made a match. In personal conversation, Thom confirmed their recollections for them, and even provided not just the year, but the exact date and any other missing details. This kind of thing happens so frequently that behavioral psychologists have a name for it: the bandwagon effect. When we perceive that members of our group have a shared belief, we tend to embrace that same belief—particularly in a case like this where the members were seeking an explanation for a memory, and the charismatic and passionate Thom Reed was right there with all the ready-made details.

The descriptions offered in this case so closely echo popular culture assumptions and depictions of alien encounters and abductions (e.g., beams of light lifting people up into a glowing, hovering craft, as in the famous poster for *Fire in the Sky*, recounting Travis Walton's alleged abduction) that it's hard not to infer some connection. This might be pure coincidence (perhaps aliens also consume pulp magazines, films, and TV shows about themselves and present themselves to humans in ways we expect them to), but if social psychology plays at least some role in this incident, it's not hard to find templates that would have been familiar to the teens. There were many alien abduction and UFO-themed films in 1969, including *The Body Stealers*, *Marooned*, *Journey to the Far Side of the Sun*, *Moon Zero Two*, *The Andromeda Strain*, and *The Monitors*—and, of course, *Star Trek* had premiered several years earlier. Reed notes that at the time there was a lot of discussion in the town—and especially among his family—about space and alien life. "Their minds were open to it. People were looking up and it happened to be a holiday. So you had hundreds of people outside with other people that they didn't normally associate with. … And this happened right after the moon landing."

In context and retrospect, it's easy to see why UFO and alien abduction researchers would prefer to ignore the Berkshire UFO case: it's wholly implausible, devoid of evidence, and strains the credulity of even the most ardent believer. Yet acknowledging this forces believers to face the uncomfortable truth that seemingly sincere alleged victims of alien abduction are almost certainly mistaken (or lying). The further disconcerting corollary is that many (perhaps most) other accounts of alien abductions rest upon equally flimsy evidence. Admitting that the Berkshire case is highly dubious would mean exposing some other cherished abduction cases to similar skeptical scrutiny, from Travis Walton to Betty and Barney Hill.

In many ways, this case reminded me of another strange mystery, also roughly from the same era (1977) and region (Massachusetts): the Dover Demon (see my column "Deconstructing the Dover Demon" in the January/February 2023 SI). In that case, too, there were about three main eyewitnesses, all teens who knew each other in a small town, and there was also not a shred of independent corroborating evidence. It's certainly possible that some odd or unusual events may have happened to one or more of the kids that day—and, as noted, those events may or may not be related—but in any event, it's clear that the events weren't strange enough to be notable until decades later when they shared their stories with each other and with TV show producers. The Berkshire UFO case, though shiny bait for mystery mongers, crumbles under critical analysis and the burden of proof. ■

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2. In this regard, the Berkshire UFO case has parallels to the 1947 Roswell UFO case, which was essentially regarded both locally and by UFO researchers as a nonevent until about 1980, when mystery mongers Charles Berlitz and William Moore published their best-seller *The Roswell Incident* based on recollections that had only surfaced a few years earlier in 1978 via researcher Stanton Friedman.

SCIENCE OVER PARTY

FIVE TIPS FOR THE LEFT AND RIGHT

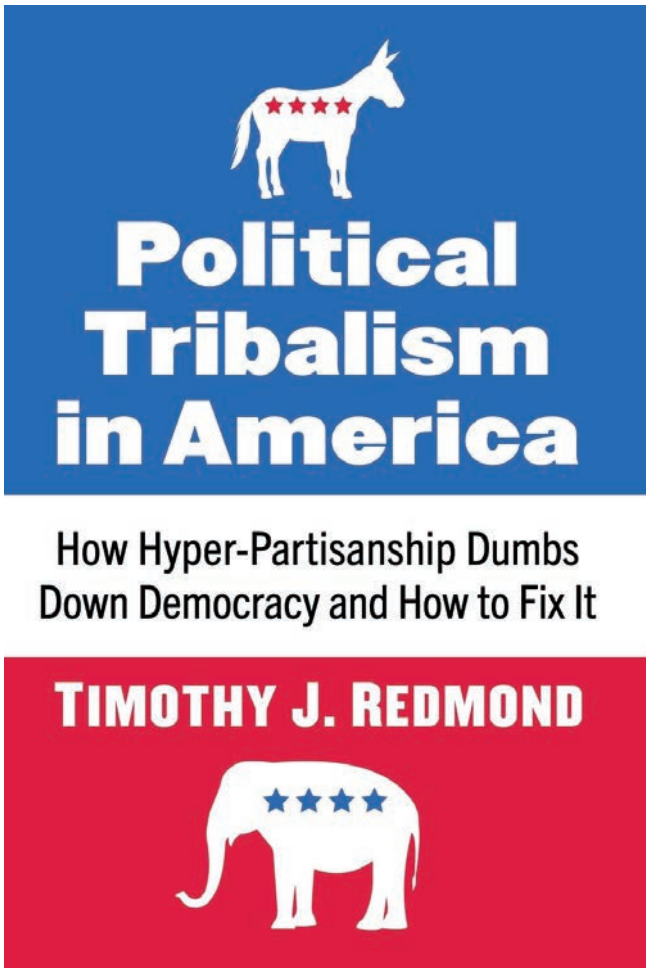
TIMOTHY J. REDMOND

Democrats and Republicans have accused each other of waging a "war on science" (Mooney 2006; Stossel 2018). Unfortunately, they both have a point. Mistrusting science is often a bipartisan endeavor.

Democrats and Republicans are routinely at odds. Each party's members have distinct views on everything from public policy and candidate evaluations to food and entertainment (Glueck 2013; Hibbard 2014). But there is one thing that many members of Team Red and Team Blue have in common: a tendency to regard some scientific claims as trustworthy and other scientific claims as untrustworthy (even though they characteristically disagree about which is which).

Evidence for this phenomenon can be found in survey data. For instance, a 2020 Stanford University poll found that Democrats are more likely than Republicans to agree with the scientific consensus that human activity is causing climate change (94 percent and 69 percent, respectively) (Krosnick and MacInnis 2020). Similarly, a 2023 Pew poll revealed that Democrats are more likely than Republicans to follow the advice of the American Medical Association and be fully vaccinated against COVID-19 (81 percent and 54 percent, respectively) (Funk et al. 2023). However, a 2023 Pew poll found that Republicans are more likely than Democrats to agree with most scientists in the American Association for the Advancement of Science that the United States should build more nuclear power plants (67 percent and 50 percent, respectively) (Rainie and Funk 2015; Leppert and Kennedy 2023). What's more, recent polling suggests that Republicans are more likely than Democrats to agree with the scientific consensus that genetically modified foods (43 percent and 38 percent, respectively) and foods grown with pesticides (39 percent and 23 percent, respectively) are safe to eat (Rainie et al. 2015; Funk and Kennedy 2016; Hernandez 2024).

Proof that partisans will accept certain scientific claims while rejecting others has also been demonstrated experimentally. In 2017, psychologists Anthony Washburn and Linda Skitka randomly assigned one of two versions of a "scientific study" to Democrats and Republicans and asked them whether they trusted or distrusted the results (Washburn and Skitka 2017). The two reports were identical in every way, save one: each version arrived at a different conclusion. Indeed, one version found that cities with strict CO_2 vehicle



emission standards were more likely to have *lower* CO_2 emissions than cities without such standards, while the alternative version found that cities with strict CO_2 vehicle emission standards were more likely to have *higher* CO_2 emissions than cities without such standards.[1] Sure enough, Washburn and Skitka found that Democrats trusted the study's results when it revealed that strict CO_2 emission standards were associated with lower CO_2 emissions but distrusted the study's findings when it revealed that strict CO_2 emission standards were associated with higher CO_2 emissions. Republicans, however, came to the opposite conclusion. That is, Republicans who received the "strict standards/lower emissions" version of the study distrusted its results, while Republicans who received the "strict standards/higher emissions" variant trusted its findings (Washburn and Skitka 2017).

It's Party All the Way Down

Many Democrats and Republicans inconsistently follow the science because they consistently follow their party. In an ideal world, Democrats and Republicans would defer to the expert consensus on scientific issues of import. Unfortunately, in the real world, partisans tend to look to their political parties' politicians, pundits, and activists for guidance on such subjects instead (Redmond 2022). The problem is that a party's decision about whether to trust or distrust the science may be based on politics—say, appeasing donors or part of a party's coalition—rather than evidence (Oreskes and Conway 2022). Thus, when the political parties decide to improve their political prospects by denying the science, many of their faithful supporters will simply follow along.

The Way Out

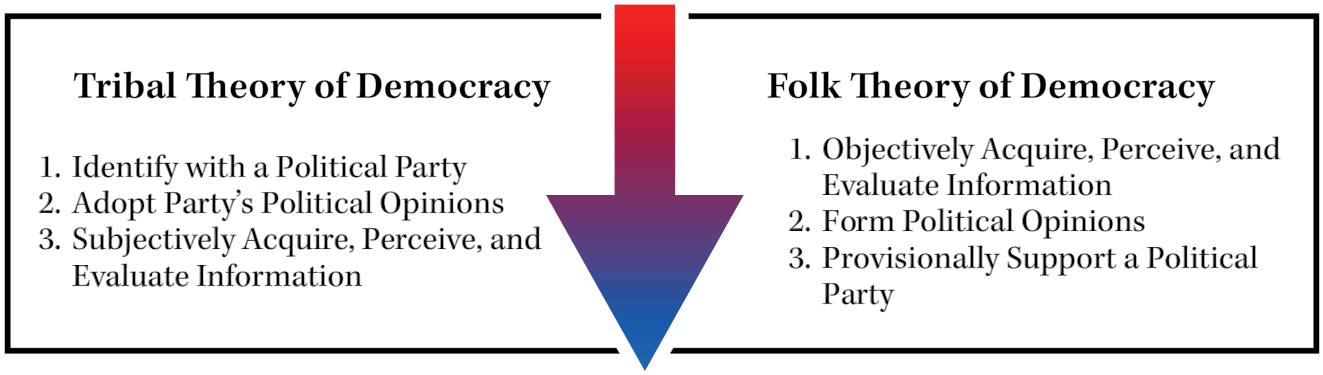
Fortunately, there are several ways we can help ourselves and our fellow citizens mitigate the tendency to deny scientific claims at the behest of our political parties. (For a more detailed discussion, see my book *Political Tribalism in America* [Redmond 2022].)

Hold party attachments lightly. The democratic ideal—or Folk Theory of Democracy—imagines that our thinking determines our allegiance to a political party. But this is largely a mirage. In truth, partisans typically subscribe to the Tribal Theory of Democracy in which their allegiance to a political party determines their thinking (Figure 1) (Redmond 2022). But if we always follow a party that does not always follow the evidence, we will blindly oppose some scientific ideas we should support and support some unscientific ideas we should oppose. Bad thinking engenders bad politics, and bad politics can engender bad policy. As such, we must put our allegiance to scientific truth, as best the experts can determine it, above our allegiance to party, or we may cause irreparable harm to the ship of state as well as the state of science.

Resist the politicization of science. As the psychologist Steven Pinker notes, the "major enemy of reason in the public sphere today … is not ignorance, innumeracy, or cognitive biases, but politicization" (Pinker 2018). When a subject becomes political, the Democratic and Republican parties will invariably try to distinguish themselves by adopting opposing points of view on the matter—if *they* support it, *we* will oppose it, and vice versa. Hence, when trusting science on a subject becomes a mark of membership for one party, distrusting science on that issue will become a central component of the other party's identity (Mayer and Smith 2023). So, yes, we should criticize the parties when they repudiate the science and wear that denial as a partisan badge of honor. That much is obvious. But we should also censure the parties when they flaunt their pro-science views in a partisan manner as well, because one party's virtue signal will inevitably be perceived by the other party as a vice. On this basis, those "In This House, We Believe … Science Is Real" signs are likely doing more harm than good.

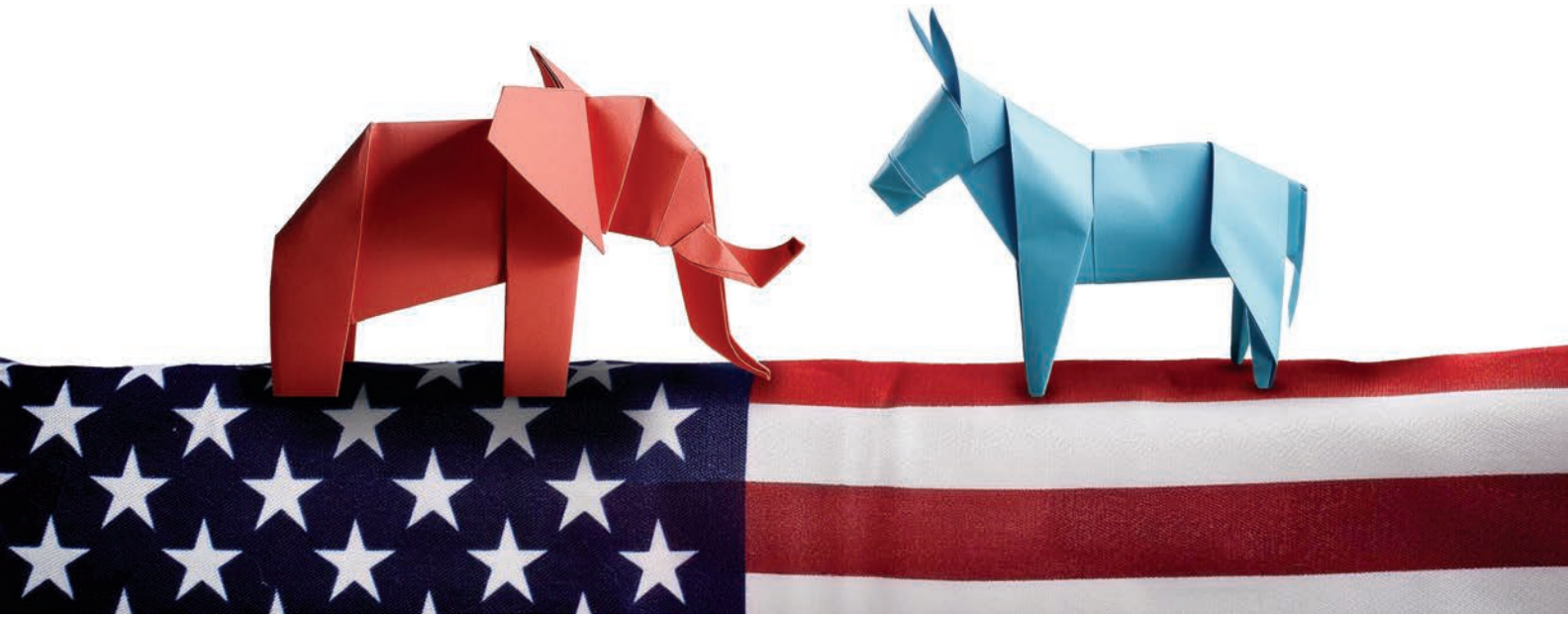
1. The results detailed in the first excerpt might arise because cities with strict vehicle emission standards could be home to more new cars, which emit less CO_2, than cities with more lax standards. The findings relayed in the second excerpt might come about because cities with strict vehicle emission standards could be home to more old, dirty cars because newer, cleaner cars are too expensive (van Benthem 2021).

Figure 1.


Tribal Theory of Democracy
1. Identify with a Political Party
2. Adopt Party's Political Opinions
3. Subjectively Acquire, Perceive, and Evaluate Information
Folk Theory of Democracy
1. Objectively Acquire, Perceive, and Evaluate Information
2. Form Political Opinions
3. Provisionally Support a Political Party

Stop propagating the stereotype that members of the opposing party are science-denying dolts. First, whether someone trusts or distrusts the science isn't a matter of scientific literacy. When the psychologist Andrew Shtulman gave students a series of questions regarding the theory of natural selection, he didn't find any correlation between participant test performance and belief in evolution. In other words, many people believe in evolution without truly comprehending it, and vice versa (Pinker 2018). Similarly, when the legal scholar Dan Kahan assessed people's understanding of climate change, he found that "both those who accept human-caused climate change and those who don't displayed very poor comprehension of climate science" ("Climate Science Literacy…" 2015). Second, while many Democrats or Republicans reject the scientific consensus on one issue or another, many of them don't. Recall that large swaths of Democrats support nuclear power (50 percent) and believe that GMOs are safe to eat (58 percent) (Leppert and Kennedy 2023; Funk and Kennedy 2016). Or remember the fact that 69 percent of Republicans believe that human activity is a cause of climate change. Moreover, most Republicans support stricter fuel efficiency standards for cars (52 percent), taxing corporations based on their carbon emissions (55 percent), and tougher restrictions on power plant emissions (64 percent) (Tyson and Kennedy 2020). To paraphrase American poet and essayist Walt Whitman, the Democratic and Republican parties are large and contain multitudes. Thus, making blanket accusations that the opposing party "denies the science" is, in and of itself, a form of science denial.

Encourage unlikely partisan sources to join forces with unbiased journalists and scientists in the fight against science denial. Democrats and Republicans routinely succumb to the Hostile Media Effect—that is, they view neutral sources as biased against their own political party (Vallone et al. 1985). Accordingly, partisans will often perceive impartial journalists and scientists as untrustworthy and thus unconvincing, particularly when the former deem the latter's conclusions as unsavory. However, Democrats and Republicans have been shown to be open to persuasion by co-partisan agents who speak out against their own party and apparent political interests (Berinsky 2023). Thus, a Republican who follows the science on climate change, or a Democrat who adheres to the science on GMOs, might have more success convincing a cynical member of their own party to follow the science than any neutral or cross-partisan source. In fact, one recent study found that unvaccinated Republicans were more likely to express a desire



to get the COVID-19 vaccine when told to do so by a fellow Republican than when told to do so by a Democrat (Pink et al. 2021). Call it "partisan Jiu Jitsu"—using the power of partisanship against the parties themselves on behalf of science.

Adhere to the precepts of collaborative inquiry whenever we discuss a scientific issue that has been politicized with a member of the opposing party. In other words, we shouldn't dwell on *what* we and our interlocutor believe or even *why* we believe it. To do so would only encourage an exchange of talking points and prove pointless. Instead, we should focus on *how* we each came to believe what we believe (McRaney 2022). We should ask each other: How many sources do we have in support of our belief? Are some of these sources more reliable than others? Why or why not? These kinds of epistemological questions can encourage critical thinking (e.g., by fostering discussions about expertise, expert consensus, peer review, research methods, and cognitive biases) and discourage defensiveness (e.g., by challenging this or that source for a belief rather than the belief itself), thereby cultivating a mind that is more willing and able to change as a result.

Let Reason Reign

It has been said that Democrats are from Venus, and Republicans are from Mars (Robb 2018). Yet we have seen that members of each party are all too earthly in their tendency to deny certain scientific claims when those claims conflict with the stated positions of their political parties. However, if Democrats and Republicans can implement some of the suggestions above, perhaps they will find a way to let reason reign on scientific matters as if they hailed from Vulcan instead of Venus, Mars, or even Earth. ■

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For more, read **"The Politicization of Scientific Issues"** by Jeanne Goldberg.

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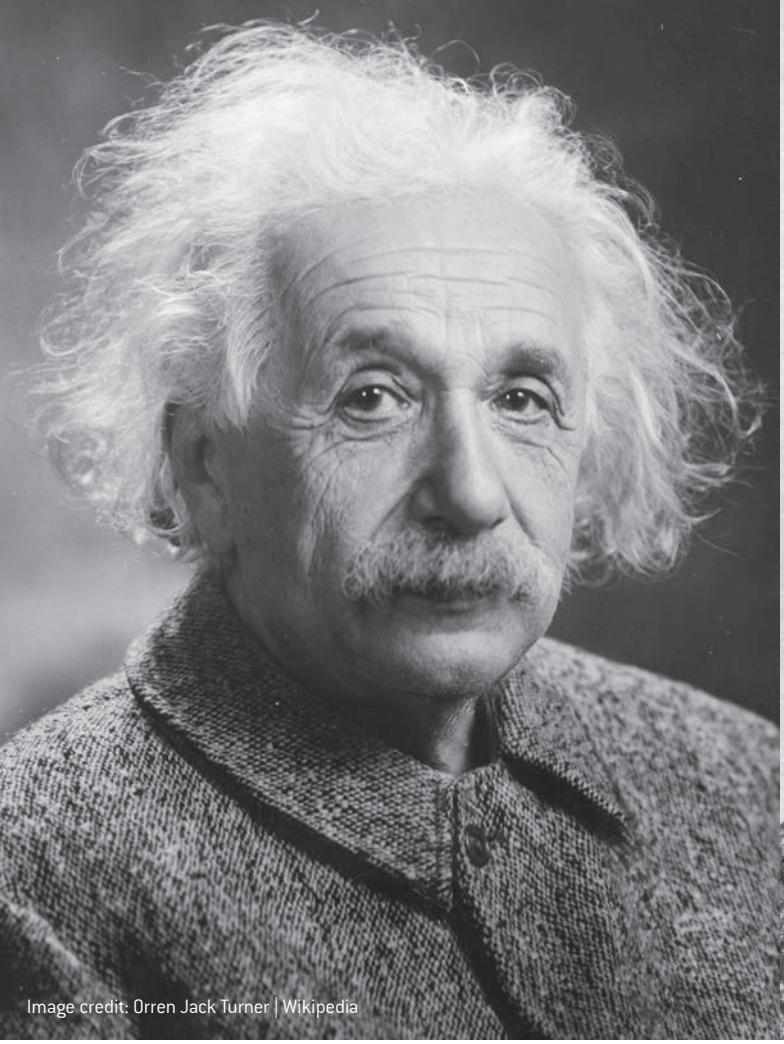

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Is Science Progressive or Conservative?

MATHIEU BEAU

In our modern world, we consider science to naturally go hand in hand with progress.[1] These two concepts are almost perceived as synonyms. Science is progress; I believe in science as I believe in progress. We then consider ourselves *progressive*, as supporters of progress, "moving forward" in the etymological sense of the word. Progress is often opposed to conservation, with the latter being seen as a symbol of inertia, i.e., resistance to change. In the eyes of the general public and progressive intellectuals, science—which is constantly advancing—cannot be conservative. By *conservative*, I mean preserving, safeguarding, and maintaining things, structures, and unchanging ideas. But is science only progressive?

Scientific ideas are often seen as revolutionary, wiping away the past, the *tabula rasa*. However, while ideas evolve, change, and modify, they still preserve certain older ideas that inspire the new ones. In this sense, we will see that science preserves more than it changes. But this is not opposed to progress. Actually, the foundation of science itself obeys a law of conservation, despite being in constant motion. As for scientists, Albert Einstein is the famous symbol of both scientific and political progress (Person of the Century 1999). We often hear that he revolutionized physics and our understanding of

1. Let us note that we will not address the issue of defining progress and progressivism in science, which has been extensively studied by numerous authors. See, in particular, the article by I. Niiniluoto (2012), which provides a comprehensive review of various definitions of progress in science. Thomas Kuhn (2012) associates scientific progress with an improvement in the predictive capacity of the theory. See also another definition (similar to Karl Popper's definition), which this time links scientific progress to the discovery of truth (Niiniluoto 2013). The authors of these two references clearly connect the idea of science with progress; in particular, Niiniluoto answers affirmatively the question posed in the title of this article: "Is science progressive?"

nature. However, the historical reality is more complex than we think. Einstein could be a staunch conservative in many aspects, while other scientists who are perceived as more conservative were more open to progress.

This article examines the contradictions and hesitations between progress and conservation inherent to science and the people who shape it through the illustrious example of Einstein. We will defend the thesis that sciences are built in the image of nature, i.e., preserving what needs to be preserved and constantly evolving to endure. At the end, we will support the idea of the existence of a complementarity rather than a dichotomy between progress and conservation in the construction of science.

Einstein vs. Bohr: Revolutionaries or Conservatives?

As compared to his theory of relativity, Einstein is less known to the general public for his work in quantum physics, which nevertheless earned him the 1921 Nobel Prize in physics. His interpretation of the photoelectric effect in one of his four articles in 1905 introduced the idea of light particles, or light quanta, now known as photons (Einstein 1905a). Building upon the 1899 work of Max Planck, another illustrious German physicist, and the experimental research of Heinrich Hertz in 1897, Einstein wrote, in my opinion, his best article in 1905 because he was able to demonstrate a property of nature that was still being debated at the time, namely the existence of elementary particles. Although the hypothesis of energy quanta had been proposed by Planck in 1899, Einstein was the first to take the decisive step and embrace the quantum nature of matter on a microscopic scale. His explanation, simple and elegant, was the most convenient way to describe nature, that is, the observation of phenomena. Yet he was not among those who completely revolutionized atomic physics. He strongly opposed the work of the Copenhagen school and its leader, Niels Bohr. Did he oppose the theoretical results? No, he opposed the philosophical interpretation of those results.

Quantum physics is based on the idea of intrinsic randomness in nature. The uncertainty principle, formulated by Werner Heisenberg (1971) in 1927, provides the clearest formulation of this concept. The statement of this principle tells us it is impossible to simultaneously know the position and velocity of a moving particle. Furthermore, if we know the uncertainty in the measurement of position, then the uncertainty in the measurement of velocity is at least equal to a certain value that is inversely proportional to the first uncertainty. Due to this fundamental uncertainty, the classical description of matter no longer works. We can no longer, as Newton did, describe a particle as a material point. Another representation is therefore necessary.

In 1926, Erwin Schrödinger proposed an equation, now bearing his name, that describes the dynamics of a particle using a wave function. Thus, a particle is seen as a wave on an atomic scale and as a particle on our scale. What is surprising

Niels Bohr with Albert Einstein in 1925. Credit: Paul Ehrenfest.

is that, conversely, in the case of light, it was first shown to behave like a wave (according to the works of Thomas Young in 1804, James Clerk Maxwell in 1850, and Heinrich Rudolf Hertz in 1898), and then in 1905, it was shown to behave as a particle, the famous photon. This seems contradictory: light is *both* a wave and a particle. As for atomic matter, we face a similar problem. Indeed, a particle behaves like a wave, but when we observe this particle, we see it as a particle. To resolve this problem in the interpretation of quantum physics, the physicist Niels Bohr formulated in 1928 one of the greatest ideas in the philosophy of science of the twentieth century: the principle of complementarity (Bohr 1928).

The principle of complementarity suggests that two different views can both accurately describe the nature of matter, despite their apparent opposition. Is a particle a material point or a wave? It is both, depending on how you observe it. But then, what is the correct description of reality? The question is meaningless, Bohr responded to Einstein during the 1927 Solvay Conference, which brought together the greatest physicists of the time. Einstein did not accept Bohr's answer, and every evening Einstein proposed new problems to Bohr to show him the inherent contradictions in the new quantum theory. However, Bohr always found an answer consistent with the principles, and ultimately his theory was strengthened. Who was conservative? Einstein? No, because he wanted to revolutionize physics. And yet, he held unwaveringly to the good old classical physics and the idea that "God does not play dice." Bohr? No, because he revolutionized classical conceptions of physics. And yet, he held onto the idea that nature was not as we thought it was and responded, "Who are you, Albert Einstein, to tell God what to do?" So, which of these two scientists was progressive?

The true revolutionary, in my opinion, was Niels Bohr, because he formulated the first nondeterministic physical theory, which constituted a radical change in the way of thinking and reasoning. However, he upheld the right of nature to be as it was and the duty of science to describe this nature as it was. Nature has its own inherent order, and we cannot change it or make it conform to our desires. Bohr did not seek to change nature; he simply formulated a theory that represented it as faithfully as possible and aimed to apply this theory to accurately describe the experimental results it provided. In this sense, he was conservative or, as John Archibald Wheeler put it, a "daring conservative" (Wheeler 1985, 69). (Interestingly, following this reflection, J.A. Wheeler also coined the concept of "radical conservatism" [Thorne 2019].) On the other hand, Einstein wanted nature to be as he believed it should be. He aimed to revolutionize our ontological understanding of what nature is, whereas Bohr sought to revolutionize our representation, our understanding of nature; he revolutionized epistemology and not ontology. Both men were, in their own way, both conservative and progressive, but they disagreed on the approach to constructing a new physics. Einstein saw determinism as a fundamental principle of nature, whereas for Bohr, the principle of complementarity allowed for a better understanding of the complexity of nature.

Einstein vs. Poincaré: 'Tabula Rasa' vs. Continuity

Let's pause for a moment on what made Einstein famous: relativity. In his 1905 article, the *annus mirabilis*, Einstein is said to have forever changed our conception of time, space, and matter (Einstein 1905b). However, Henri Poincaré was the first to speak of the principle of relativity and show the equivalence of mass and energy for electromagnetic energy. In his 1902 book *Science and Hypothesis* (Poincaré 1902), he denied the existence of absolute space and time and was the first to consider that physics could use non-Euclidean geometry if it became more convenient for describing nature. He was therefore a revolutionary even before Einstein!

However, Einstein's work is much better known than that of Poincaré. There are several reasons for this. On the one hand, Poincaré was modest and humble to the point of writing in his work on relativity submitted in 1905 (Poincaré 1905) regarding Lorentz's work: "The results I have obtained agree on all important points with those of Lorentz; I have only been led to modify and complete them in some minor details." That's an understatement! He did much more than that by deriving the correct equations for transformations between two relatively moving reference frames and, a few months later, by correctly formulating the principle of least action that unified mechanics with electromagnetism (Poincaré 1906). But he did not want to claim the entire credit for himself. In contrast, Einstein did not cite any articles in his publication (Einstein 1905b) and did not even mention Poincaré's work! But the reason, in my opinion, is deeper. While Einstein wanted to start from scratch, eliminate the idea of the existence of the ether,[2] and claim a refoundation of the laws of physics, Poincaré was more cautious. Poincaré (1902) discussed the idea that the ether was no longer useful in physics because absolute motion was not perceptible, and ultimately this hypothesis could disappear in the future. He did not say that absolute motion did not exist; he simply noted that modern experiments showed it was not measurable, so it was not necessary to discuss it, and that relative motion was the only conceivable one. By citing experiments from his time, namely the Fizeau and the Michelson and Morley experiments, he concluded that absolute space and absolute time did not exist, that the concept of simultaneity needed to be reconsidered, and that Euclidean geometry, being purely conventional, could eventually be replaced by non-Euclidean geometry (Poincaré 1902; 1905; 1906). In other words, for Poincaré, the ether was no longer as convenient as it had been in the past, and thus, according to a principle of selection, the hypothesis should die its natural death. Einstein, on the other hand, was much more radical. He stated that the ether did not exist and that matter moves in empty space in which light travels at a constant speed relative to all reference frames in relative motion. Poincaré was more subtle; he wanted sci-

2. In the nineteenth century, the ether was thought to be a medium that filled all of space and served as a carrier for electromagnetic waves.

ence to progress in the sense of getting closer to the truth but did not necessarily want to sacrifice the work of his predecessors. He wanted to ensure continuity between the science of yesterday and tomorrow. If science is the accumulation of knowledge of the world, it is built over time.

Einstein vs. Bergson: From *T*ime to *t*ime

When we think of Einstein, we mainly think of the concept of time. Yet Einstein wanted to reject the idea of time passing (Lachièze-Rey 2011; Canales 2015). When he was invited to the French Society of Philosophy on April 6, 1922, he responded to Henri Bergson in a concise manner, despite Bergson's well-argued and elaborated critique, which was deep and subtle (see the verbatim of this conversation in Société française de philosophie 1922). Einstein concluded with the famous phrase, "There is therefore no time of the philosophers; there is only a psychological time different from the time of the physicist" (Société française de philosophie 1922; Canales 2015). For a physicist, this may seem inconsequential; after all, the physicist measures time, and the matter is settled. However, for those who know that Bergson had built his reputation as a great philosopher on his original idea of duration and capital T Time, which he would capitalize in his critical essay on relativity written in 1922 (Bergson 2019), Einstein's cutting comment is perceived as an affront. Bergson, who vehemently opposed the philosophical and metaphysical implications of Einstein's theory of relativity, particularly in his 1922 essay, was seen by his contemporaries as an anti-intellectual (Canales 2015). And yet Bergson's conceptions of time anticipated certain discoveries made by quantum physics (de Broglie 1941; Čapek 1971), notably Heisenberg's uncertainty principle in time-energy, while Einstein was fervently opposed to the nondeterminism of quantum theory, as we saw earlier. Bergson's thinking on time was revolutionary and forward-thinking, although it was understood as conservative in a pejorative sense, i.e., against progress.

Indeed, Bergson warned Einstein about the metaphysical excess of his thinking on time, which led some of his contemporaries to view him as an opponent of progress. Was he wrong to think that way? The idea of time in the history of ideas and scientific progress has indeed been a perpetual debate since ancient philosophers, just like other concepts used in science: space, matter, and life, to name a few. Perhaps science will someday return to a concept of time that aligns with Bergsonian duration, which is possible considering the difficulties posed by a spatial view of time and a deterministic philosophy that does not seem adapted to the developments of twentieth century sciences. Then, Einstein's thinking, which was perceived as progressive before the quantum revolution, will appear conservative due to its attachment to the old idea of determinism, while Bergsonian thought will be seen as progress. However, to paraphrase Henri Poincaré: "If

Image Credit: James Webb Telescope | NASA on Flickr

that happens one day, it will not prove that Einstein's effort was futile, for Ptolemy, whatever one may think, was not useless to Copernicus" (Poincaré 1906).[3]

Einstein vs. Einstein: From Progressive to Conservative

"The biggest mistake of my life," said Einstein when he realized that introducing the cosmological term into his equations to impose a static universe was a bad idea (Gamow 1970, 44). Edwin Hubble, in 1929, showed, contrary to what Einstein believed, that the universe was expanding. Why did Einstein not want an expanding universe? Because he believed in a static, fixed universe without motion, one that does not change. His metaphysical vision was that of a stable,

3. The full quote from Poincaré (1906, 132), translated in English, reads: "Perhaps it would be enough to abandon this definition [of length measurement], for Lorentz's theory to be as completely overturned as Ptolemy's system was by Copernicus' intervention. If this ever happens, it will not prove that the effort made by Lorentz was futile; for Ptolemy, whatever one may think, was not useless to Copernicus." By replacing Lorentz with Einstein and the definition of length measurement with that of time, the spirit of the quote is captured in the paraphrase.

immutable, eternal universe where time ultimately does not exist, and the laws of physics can never change, and where the laws of the universe are forever understood and determined. Is there a better definition of conservative thinking? All the ingredients are present.

Toward the end of his life, Einstein persisted in constructing a theory of the unification of fundamental forces. He wanted his theory of general relativity to describe all physical interactions and for the mystery to finally be resolved. He wanted to understand and explain everything. But for that to happen, nothing should move, time should stop, instant should be eternal, and duration should cease to exist. Therefore, time had to be killed, and progress along with it. Einstein truly was the greatest of conservatives! And to conclude with the irony of fate that befell Einstein, in 1920 he delivered a conference (Einstein 1922), which was otherwise remarkable from an epistemological perspective, on the ether in physics, where he renounced his abandonment of the ether in 1905, admitting that his generalized relativistic theory was incoherent without it. He proposed, at the same time, a preliminary conception of this new ether that should align with his theory. Did he have the intuition that his perfect system could one day falter and that he needed to prepare it for posterity? "God alone knows," as the popular saying goes, and we do not tell God what to do, as Niels Bohr once told Einstein. In any case, he gave up abandoning the ether (Poincaré had been more cautious, and rightly so) and the static universe (nature demonstrated his error). After his death, experiments showed that the concepts of quantum physics developed by Bohr were more in line with nature than his. In the end, progress will carry science beyond the Einsteinian system, just as it has with all great systems before it.

What the Irony of History Teaches Us

On the complex relationship between humans and progress in science, we can summarize the lesson that history teaches us with the following maxim: progress is not necessarily found where we want it to be. Those who sought to advance science (e.g., Albert Einstein) sometimes retained certain philosophical and scientific biases, values, and even beliefs, and as a result, they occasionally opposed scientific progress as defined by Thomas Kuhn (2012) as the improvement of predictive capabilities (Niiniluoto 2012). This can be seen as a mark of irony—nothing more and nothing less—because ultimately it is normal that resistance, reactions, and old ideas must be encountered for progress to occur, even the preservation of certain ideas that may initially seem obsolete. In the end, good scientific practice requires openness to everything, even to what deeply disturbs us, even if it goes against our initial consciousness and whether this openness aligns with what is perceived as progress or conservation. As we have just seen, it is indeed difficult, at first glance, to know which ideas and perspectives are conducive to progress and which ones lean toward conservation.

The debate between determinism and nondeterminism in quantum physics is a perfect example of this. Nevertheless, history shows that this radical dichotomy between progress and conservation is meaningless. First, because a debate is necessary to determine the directions in which science should progress (and thus where progress lies), and this requires being unbiased toward the prevailing ideas at the time of the debate. Second, because these two approaches—preservation and moving forward—are *complementary*, despite the evident and certain opposition between ideas of the past and those of the future. Science is never built without solid foundations, without the experience of the past, and without extensive reflection and introspection that draws nourishment from history, just as new buildings are never constructed without drawing inspiration from ancient monuments that have already proven themselves over the centuries.

Conclusion

Even if each new generation changes science, our perception

of the world, our technology, and our way of living, there is no new person, for we are beings that exist within a continuum through history. Progress is necessary when we want to better understand the world, but without continuity, there is no progress because change does not endure. Progress, therefore, lies not in rupture but in what endures. Otherwise, this change ceases to be progress and becomes a transition to something else. Continuity thus implies the preservation over time of evolving knowledge that approaches truth.

To further develop this reasoning, let us return to Bohr's principle of complementarity: two seemingly contradictory ideas necessary to describe all facets of a complex reality. Progress and conservation, which appear to oppose each other, are in fact necessary to explore the multitude of things in their unity. One without the other is meaningless and insufficient to describe nature in its entirety. The synthesis between the two may be impossible, and perhaps it should remain so, but it must exist as an ideal or rather as a quest. There are no progressives on one side and conservatives on the other because we all embody a bit of both. What distinguishes between two schools of thought (for example, idealism and realism) or two metaphysical approaches to the world is the subtle connection between several complementary aspects of the same reality, which forms a profound worldview. The way we employ this complementarity may truly define a school of thought, rather than the predominant direction of the thought itself. In other words, our manner of nuanced thinking defines our thought.

Let us delve deeper into the substance of the complementarity between progress and conservation. Progress is an immutable march forward and is thus, by its very nature, an act of conservation. On one hand, it endures in its permanence (as the popular saying goes: "progress stops for no one"), and on the other hand, it is built upon a memory that, by definition, endures over time. We arrive at a conclusion of evident simplicity but deserving emphasis: one must evolve to endure. And what endures is conserved, which leads us to a second obvious truth: there is no progress without conservation, and one cannot conserve without adapting and thus progressing. Progress, therefore, has no end in itself; it is useful over time.

"Progress and conservation, which appear to oppose each other, are in fact necessary to explore the multitude of things in their unity."

This explains why Henri Bergson vehemently opposed Albert Einstein, who did not grasp the importance of duration and extrapolated his scientific conclusions to the entirety of metaphysics. However, anyone who is radical in science, whether advocating progress or staunchly conserving, cannot be right in the long run. The famous quote by Antoine Lavoisier, "Nothing is lost, nothing is created, everything is transformed," beautifully encapsulates the thesis of this essay. To the progressives who seek a clean slate and the conservatives who resist change at all costs, I would say this: if concepts, like civilizations, fade away, they will leave an indelible mark on the history of humanity. ■

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No Witches in Amityville?

DANIEL MEYER

Some moviegoers, during intense scenes of horror, dig their fingernails into the armrest of their seats and then nearly leap from those seats when the slasher or monster suddenly lunges from the darkness—but do they pay the slightest attention to sensationalist claims that connect horror to actual history? Or are outrageous assertions more cringeworthy than the demons and slashers?

Was accused Salem witch Mary Towne Esty actually related to Bathsheba Sherman, the Rhode Island minion of evil incarnate, as the ultra-successful *Conjuring* franchise claimed?

Or was an accused witch cast out of Salem only to be interred within the backyard of the Amityville Horror house? According to one popular account, John Catchum (or Ketcham) "had been forced out of Salem, Massachusetts, for practicing witchcraft. John set up residence within 500 feet of where George [Lutz—one time owner of the Amityville house] now lived (in 1975), continuing his alleged devil worship. The account also claimed he was buried somewhere on the northeast corner of the property" (Anson 1977, 94). But to find out if it's true, we need to examine the region's history and genealogy.

Credit: Daniel Meyer

Tracing the History

The John Ketchum that would have been alive during the time of the Salem witch trials (1692) was a descendent of Edward Ketcham—as were all colonial Ketchams living in New England. Born in England in 1598, Edward moved to Ipswich, Massachusetts, around 1636 along with his family … including son John Ketcham (born September 8, 1622). Both this John Ketcham and Edward's grandson—John Ketcham (born around 1651), would have been alive at the time of the Salem witch trials with Edward's son, John, passing in 1696 and grandson, John, passing at some unknown date yet still producing offspring as late as the late 1680s. In fact, it was the first John Ketchum (born 1622) that has the only, albeit minuscule, connection to Salem, Massachusetts. Having traveled from his home in Ipswich, John Ketchum took the oath of Freeman (allowing involvement in political actions) in Salem on February 28, 1642/1643 (Edward Ketcham n.d.).

Although "The Ketcham Family History" proposes the Ketchams probably moved to Long Island in the 1640s, two of John and Susan (Payne) Ketcham's children—John and Edward—were born in Ipswich in the early 1650s (Ketcham Family History n.d.). The writer(s) of this Ketcham genealogy state(s) that although these early Ketchams owned land in Southold, New York (Suffolk County), in 1654, it is unlikely they had settled there because in 1655 they moved on to Stratford, Connecticut (Fairfield County), where Edward Ketcham died.

So, notwithstanding that John Ketcham Sr. (born 1622) and John Ketcham Jr. (born 1651) were both alive in 1692, they had moved from Ipswich, Massachusetts, to Long Island, New York, decades earlier.

Shortly after members of the Ketchum family arrived on Long Island, New York—more specifically Suffolk County where Amityville is located—a certain "Goody Garlick" was accused of witchcraft in 1657. This case occurred in Sayville (near current Amityville, and whose outlandish name origin will shortly come to light) and involved a prominent family, the Edwards. "Goody Edwards said that once Goody Garlick had requested that Edwards' daughter, who had recently given birth, provided her with some breast milk, which she did. The child immediately got sick." The implication being that the young Edwards mother's breastmilk was used by the accused witch to cast a spell to make the baby sick! No motives are given. Another theme of folktale witches was used as evidence—the witch's familiar—a black cat as assumed by the writer … a "black thing at the bed's feet." However, even this assumption does not apply; a cat would clearly have been called a cat—bringing allegations of a witch's familiar—whereas a "black thing" was commonly used to identify a demon … or the devil himself. This writer states that

Salem witch trial by George Jacobs Sr.

"Several other Edwards said she [Garlick] was a witch," and yet the "court determined the Edwards had lied" (Amityville Horror House n.d.). This may have been a summary by the writer, but the Edwards were not on trial! The court/jury would merely have pronounced Goody Garlick—the accused—as not guilty.

This case closely resembles a case during the Salem witch trials involving accused witch Rachel Clinton and John and Mary Edwards—all of Ipswich, Massachusetts (where the Ketchams originally settled). The testimony of Mary Edwards, about fifty-two years old, was given on April 4, 1692, and involved the events of December 27, 1691. The Edwards shared some blood pudding with the accused after denying her sleeping accommodations. Less than a month later, a substantial portion of their farm animals got sick or died, including five of their adult pigs. Mary's husband, John Edwards, added that the accused had three cats (Rosenthal 2013, 168–169). This was a common framework for witchcraft accusations both in Europe and the New World—a disagreement over basic aspects of everyday life leads to some sort of causality involving death or illness. And she had a cat!

There was another Edwards (Thomas), also of Ipswich, involved in the 1692 Salem trials. He served on the juries of five accused witches in the first week of January 1693 after the damning Court of Oyer and Terminer had been disbanded. All five were found not guilty (Rosenthal 2013, 724, 743–746, 754–757). Thus, there were members of the Edwards family involved in the Salem witch trials, but no Ketchams, who had all moved north. Or were there?

Although most documentation from the time of the Salem witch trials and before has been lost, some records have been preserved. Within the church records of Salem's First Church, as attributed to February 19, 1661/1662: "The case of the six members who have forsaken the church assemblies … having so long a time forsaken the fellowship of the church, and in so doing cast out themselves and cast off the church: in the issue of the consideration by a vote of the church it was consented to that these three, J. Maston, John Kichin and Joseph Boyes should have the sentence of excom[munication] pronounced against them" (White 1861, 52–53).

In much of colonial New England, education left much to be desired. Many could not write, and those who could often misspelled most words—even their own names. Often, considering four documents containing any particular person, all four would contain different spellings with none of them being correct! Consider the list of persons requesting to be dismissed from the membership of Salem's First Church to finally establish their own church in Salem Village in November 1689: Of the seventeen persons mentioned by name—ten, over half, were spelled incorrectly … with the other seven simply referred to as "wife of" (White 1861, 94–95).

Therefore, John "Kichin" might very well have been the John Ketcham in question with his name simply spelled phonetically. This would have both placed "Amityville's accused witch" closer to the location of Salem's witch trials as well as staying in the vicinity longer than has otherwise been reported. More importantly, it reveals that he was excommunicated from the Church, thus making him a "bad" person. An excommunicated individual was not eligible to enter the kingdom of Heaven according to Puritan theology. However, it does not make John Ketcham a witch!

There are many Ketchams in the Long Island, New York, area. Amityville Cemetery, in Suffolk County, New York, has at least 227, including six or more John Ketchams with one of the oldest being born in 1740. There is even a street just a couple of blocks from Ocean Avenue (where the Amityville house is located) named for this Ketcham lineage. And there are many assertions that John Ketcham once owned the property—but none proven.

Although several historical records—including extant grave markers within the aforementioned Amityville Cemetery as well as more than one Ketcham Family Cemetery— illustrate that the Ketcham name was prevalent throughout Suffolk County (especially in the seventeenth and eighteenth centuries) many researchers admit that "a direct link with 112 Ocean Ave. [and John Ketcham] remain[s] controversial." Furthermore, decidedly pro-"supernatural" researchers and websites often go so far as to disassociate the Ketcham family from any connection with the Ocean Avenue lot as having "never been verified" (John Ketcham n.d.).

To update those not familiar with the drama of the Amityville home in question: within the large colonial home located at 112 Ocean Avenue, twenty-four-year-old Ronald DeFeo murdered his family on November 13, 1974. He was later sentenced to life in prison for the murder of his mother, father, two brothers, and two sisters. The reasons for the mass murder, as well as the methods used, remain unresolved, and more than likely will stay that way; DeFeo died on March 12, 2021, at age sixty-nine. Thirteen months after the mass murder, George and Kathy Lutz, along with their three children, moved into the house. According to the Lutz family, they experienced twenty-eight days of supernatural terror before fleeing for their lives. Both George and Kathy have also died. Even without the episode of mass murder by Ronald DeFeo, and the ghost story accounting by the Lutz family, the Ocean Avenue property con-

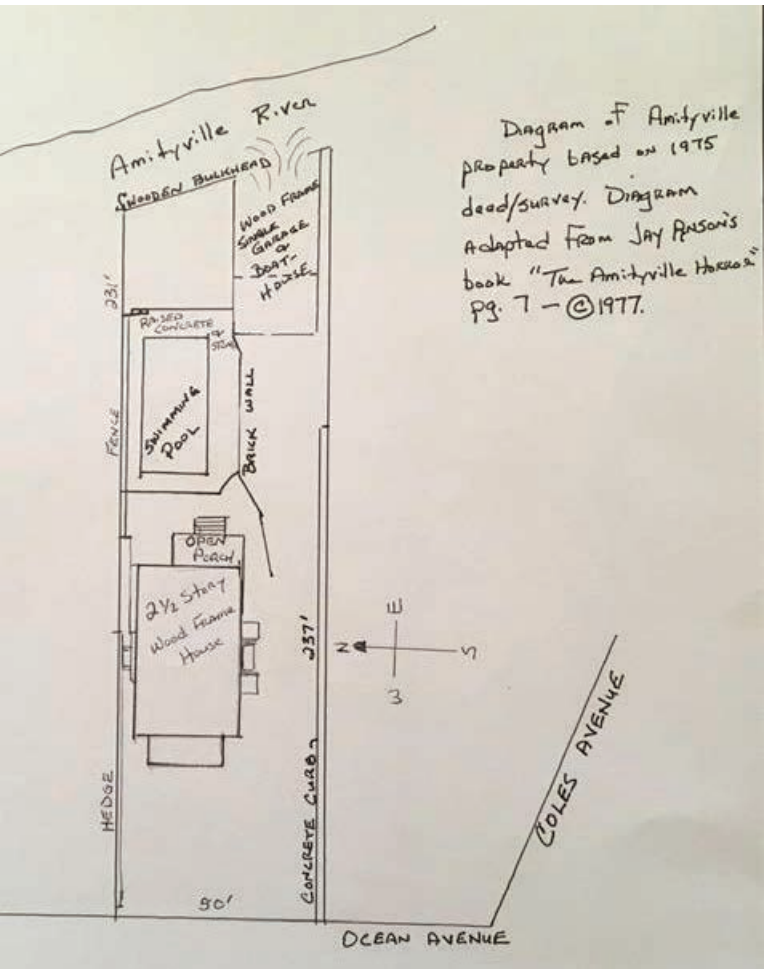

Photo by Daniel Meyer, as adapted from the map included in Jay Anson's book, *The Amityville Horror*.

tains a lot of very interesting "normal" history. However, verifying those historical assertions is quite a challenge.

Reviewing the survey map and description of the property in relation to historical facts and patterns is revealing in and of itself. The house is not very old, having been built in 1928. The *Amityville Horror* novelist Jay Anson most likely misled the public just as much as the trial attorney of murderer Ron DeFeo—William Weber—"misguided" his own audience (the jury).

The Missing Haunted Burial Grounds and Witches

With no witchcraft, no disembodied voices, no demons, no ghosts (and no Ketchams), this property might be labeled as boring—just another home for the rich within just another affluent neighborhood (there's a yacht club just down the street). However, nothing could be further from the truth. The DeFeo/Lutz property had fifty feet facing Ocean Avenue and was 237 feet deep with a boathouse on the Amityville River. Looking back hundreds of years, with no meeting house or church graveyard nearby, it was common for farm families to bury family members on their own property, and Puritan law prohibited burying accused or convicted witches within consecrated ground such as a graveyard. The Anson description placed the Ketchum residence "within 500 feet of where George [Lutz] … lived" and his burial "somewhere on the northeast corner of the property" (Anson 1977, 94). Such specifics could only come from three sources: deeds, probate records, or diaries (or other handwritten documents). Probate records would delineate property boundaries in detail, as would deeds, but probate materials would speak little of grave markers or burials. Diaries also would likely not give precise locations of gravesites other than interment within an existing cemetery. The northeast corner of the DeFeo/Lutz property seems unlikely, because a burial close to the river (eastern edge of property) would be disturbed by flooding, and anything west of the easternmost strip would have been disturbed by construction (the inground swimming pool is located between the river and the rear of the house).

There have been enough mistakes, embellishments, and sensationalist claims regarding this Amityville Horror legend to fill volumes. The writers who spoke of the 1657 "Garlick" witch accusation in Suffolk County, New York, relate the origin of Sayville (about fifteen miles east of Amityville on Long Island's south shore and another proposed Ketchum\Puritan stopover) as a contraction for Salem Village. "Originally," the writer asserts, "Salem was called Salem Village … later dropping the second part of the name" (Amityville Horror House n.d.). Obviously, this origin story of Sayville's name is completely false. The same writers also claim the Ketcham family lived in Salem although even his own source, Peter Venturini, clearly states they lived in Lynn, Massachusetts (Venturini n.d.). Lynn is located east of Salem Village (currently Danvers) and further east of Salem. "The southernmost section of Salem Farmes [which was how Salem Village was originally referred to, or simply The Farmes], the woods, was located along the Lynn line" (Baker 2015, 76). And Anson's Shinniecock Indians lived a good fifty miles away from Amityville, with his "sensationalized portrayal of native burial rites" referred to by author Colin Dikey as a "mishmash of hogwash."

In all this "trope of a haunted burial ground [that] took root and spread throughout … the American culture" (Dikey 2016), only two things can be proven with any assurance: in 1661, a man by the name of John Kichin didn't appreciate the teachings of Salem's First Church (which doesn't make him a witch), and various grave markers of the Edward Ketcham lineage, such as Stephen Ketcham (1732–1792) in Huntington, New York (north of Amityville), and Zebulon Ketcham (1787–1870) in Amityville Cemetery, reveal the remnants of a true story. Zebulon's father, also named Zebulon, who once dined with George Washington (Rumsey 2013) is also interred within Amityville Cemetery, but his marker is of recent origin. Huntington's Old Burying Hill Cemetery has even older surviving markers, including Philip Ketcham (1691–1770) complete with a rare foot marker, but this Ketcham is not known to be in the direct lineage of Edward Ketcham. Long Island's first resident stone artisan was Ithuel Hill in Sag Harbor in 1789 (Venturini n.d.).

So, there are no witches under the Amityville Horror House lawn—and no witches in 1692 Salem either, but that's quite another story. What secrets wait in your back yard? Sharpen that shovel and let the digging begin! ■

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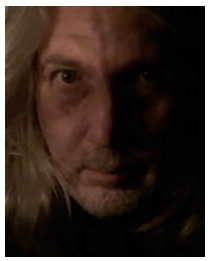


Daniel Meyer has always been skeptical, but he has been known to entertain the unexplained. Occasionally sipping a margarita or waiting for whales to breach, for the past ten years he has been correcting the myriad mistakes within history's lethargic rendition of the Salem witch trials. Want the real truth? Send Random House to his door. Meyer can be reached at dmeyer@gargoylesandmoonvixynns.com.

INTERNATIONAL REPORT]

'Tropospheric Water': Pseudoscience under the Roof of Vytautas Magnus University

Algimantas Kvecys

Editor's note: CSI maintains a cooperative relationship with many national and local skeptical organizations around the world. This report is from the chairman of the Lietuvos Skeptikų Draugija (Lithuanian Skeptics' Society). To learn more, visit their website at https://www.skeptikudraugija.lt/.

In Lithuania, the Skeptics' Society recently drew attention to a strange and, in our opinion, misleading marketing campaign conducted by JSC Simneka. This company, led by Rolandas Nekrošius, advertises and sells a product called Tropospheric water priced 16,000 times higher than ordinary tap water. But is this product truly as special as its creators claim?

The sellers of this water promote incredible stories about its miraculous properties. They claim that the water can be "charged" with vibrations and thoughts, that it contains sources of life, and that it can detoxify and heal. However, after investigating these claims, the Skeptics' Society found that the claims lack any scientific basis. JSC Simneka promotes its product through various media channels using manipulative communication techniques and misleading statements. Their water is described as structured and oxygenated, but scientists argue that these claims are unfounded.

Interestingly, JSC Simneka operates under the business umbrella of Vytautas Magnus University (VDU). While the university may not have the necessary tools to evaluate its partners, the Lithuanian Skeptics' Society believes this type of evaluation could set a precedent for preventing such cases in the future.

The company's marketing communication includes terms such as *purification*, *healing*, *oxygenated*, and *regeneration*, giving the impression that Tropospheric water is a cure-all. However, scientists such as Joana Smirnovienė, a chemical engineering PhD, and Vaidotas Urbonas, a biomedical scientist, state that these claims are entirely unfounded. The company also uses various logical fallacies to persuade potential consumers. They appeal to nature, emotions, origin, and authority, but these techniques lack any scientific foundation. For example, Joseph A. Schwarcz says that oxygenating water yields no physiological effects, and Kęstutis Ramanauskas explains that the body absorbs oxygen through the lungs—not the digestive tract.

An accredited oxygen concentration test revealed that the manufacturer's stated oxygen concentration in the product does in fact match the actual concentration. However, this does not mean that the product has any special health benefits. The pseudoscientific ideas about water stem from various sources, including mysticism, esotericism, inaccurately interpreted scientific research, and alternative medicine. Despite being widely criticized, Masaru Emoto's studies on water crystals remain popular among pseudoscience proponents.

Tropospheric water is a classic example of a product based on pseudoscientific theories. It is sold at an exorbitant price but lacks any scientific foundation for its claims. The Lithuanian Skeptics' Society urges consumers to be cautious about misleading advertising and for universities to scrutinize their partnerships more carefully. ■

Algimantas Kvecys is chairman of the Lithuanian Skeptics' Society (Lietuvos Skeptikų Draugija), which connects people seeking to increase society's resilience by developing critical thinking skills, protecting the model of a pluralistic society, and defending consumer rights.

When Silence Speaks: The Harmful Pseudoscience of Facilitated Communication

The case portrayed in *Tell Them You Love Me* highlights the wide array of potential victims who can be harmed by promoting pseudoscientific methods of communication.

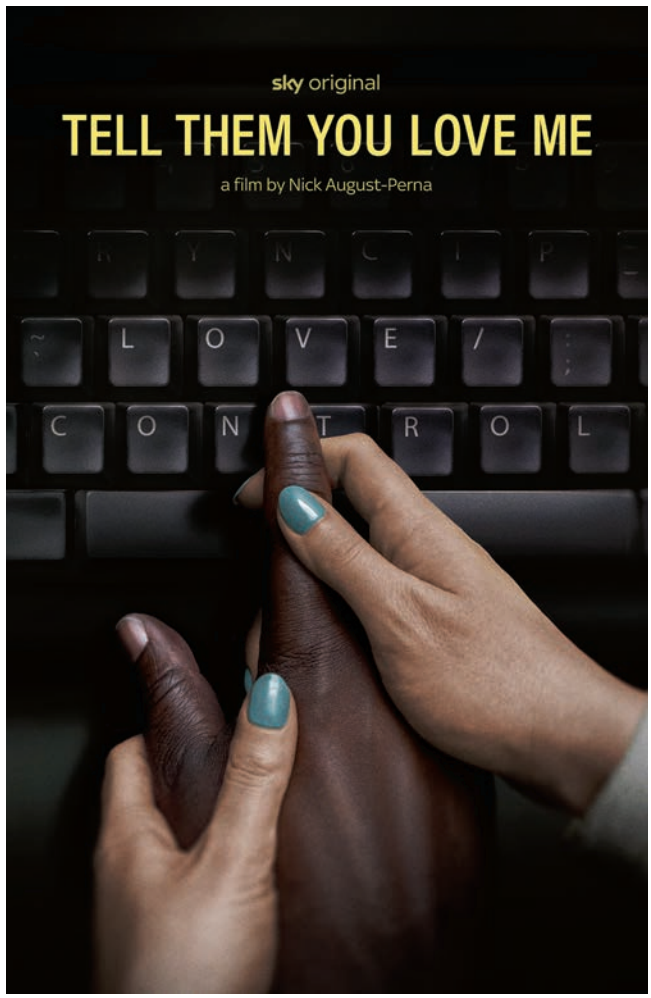
STUART VYSE

The new Netflix documentary *Tell Them You Love Me* represents a much-needed return to reality in a world largely inhabited by stories of miraculously discovered literacy among nonspeaking people. Early reviews have described the film as "bizarre," "chilling," and "painful"—appropriate reactions given its content. The documentary offers a rare look into the dangers of a long-discredited method of communication that, nonetheless, remains popular to this day. Interwoven with complex issues of race, power, and consent, at its core lies facilitated communication (Vyse 2016), a pseudoscientific practice that continues to shatter families and exploit disabled people.

At the center of the story is Anna Stubblefield, a former philosophy professor at Rutgers University-Newark. Stubblefield gained widespread publicity in 2015 when she was convicted and sentenced to twelve years in prison for the aggravated sexual assault of Derrick Johnson, a thirty-three-year-old severely disabled Black man with cerebral palsy who is unable to speak (Engber 2015). An appellate court later reversed Stubblefield's conviction based on evidence she was barred from presenting at trial. After eighteen months behind bars, Stubblefield was released and subsequently pled guilty to third-degree aggravated criminal sexual contact to avoid a retrial (Moriarty 2018). Despite her plea, Stubblefield insists she is innocent, maintaining that Johnson, through facilitated communication, seduced her and consented to sexual intercourse.

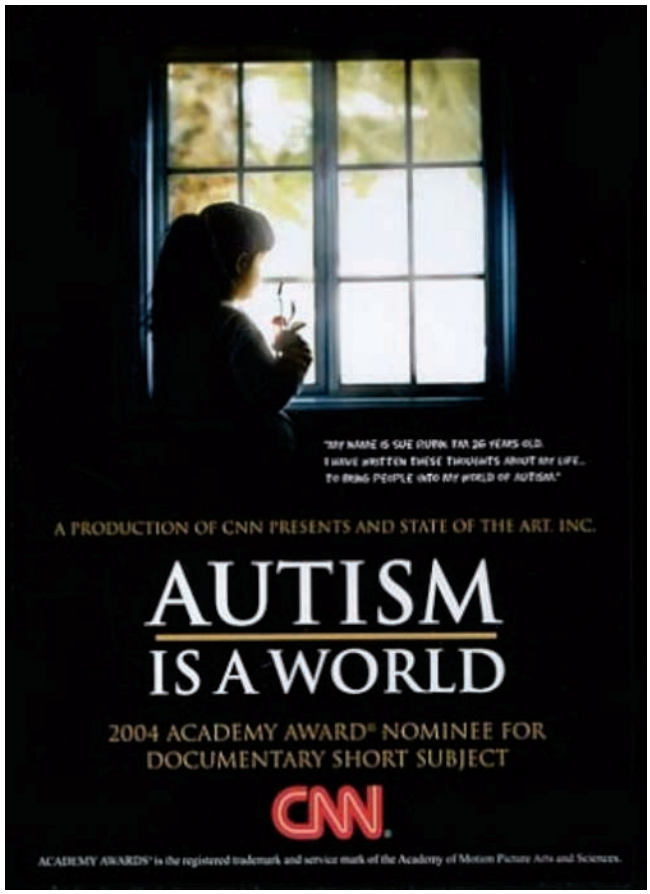
Articulate Typing

Facilitated communication (FC) was first introduced by Australian disabilities advocate Rosemary Crossley. In the early 1990s, Douglas Biklen, a professor of education at Syracuse University, brought the technique to the United States and founded the Facilitated Communication Institute at Syracuse. The basic premise of FC posits that many nonspeaking people with cerebral palsy or severe autism have broken bodies but intact minds. Contrary to prior assessments, these people are believed to have sophisticated language abilities hindered by their physical limitations. However, if their hands or arms are supported by another person—a trained facilitator—nonspeaking individuals are able to type out messages on a keyboard.



The early results were astonishing. People who had never spoken a complete sentence were suddenly writing poetry and novels with the assistance of their facilitators, and FC began to spread like wildfire. However, the involvement of another person in the process—the facilitator—raised obvious questions about who was really typing. Peer-reviewed studies using simple blinding techniques began to emerge, and the results were devastating.

Often the nonspeaking person is not looking at the keyboard. (Screenshot from PBS *Frontline* "Prisoners of Silence.")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In a typical experiment, researchers placed the nonspeaking individual and the facilitator at a table with a barrier between them so that each could be shown pictures of familiar objects, but they could not see each other's pictures. When both saw the same picture, such as of a shoe, all was fine, and "s-h-o-e" was typed. However, when shown *different* images, the typed word invariably matched what the *facilitator*, not the nonspeaking person, had seen. Across hundreds of trials, there were virtually no correct responses independently made by the nonspeaking individuals. People who had supposedly been writing sophisticated essays through FC could not identify everyday objects in controlled tests, revealing that the facilitators were instead the actual authors of the typed messages.

As shocking as these early studies were, their outcomes might have been anticipated. The promoters of FC had failed to adequately address two glaring questions: First, where did this literacy come from? How did they acquire their language skills without ever speaking or receiving the kind of formal education we all get? Second, how could these people manage to type using a hunt-and-peck method *without even looking at the keyboard*? Videos of FC sessions showed that while facilitators consistently watched the keyboard, the nonspeaking person was often looking elsewhere. How was this possible?

In a foreshadowing of the Stubblefield case, the controversy became intensified when accusations of sexual abuse were typed out on the keyboards of users. In several instances, accusations led to families being separated as accused parents were either jailed or ordered to leave their homes while court proceedings unfolded. It suddenly became essential to verify whether the communications genuinely originated from the nonspeaking person. Ultimately, these cases went unproven because the messages could not be validated—but not before families were torn apart and reputations damaged.

In 1992, the PBS series *Frontline* aired an episode, "Prisoners of Silence," that reported on the rapid spread of the technique in the United States, as well as the research that discredited it. Soon after, many professional organizations and advocacy groups, including the American Psychological Association, the American Academy of Pediatrics, Autism Speaks, and the American Speech-Language-Hearing Association (ASHA), issued policy statements against the use of FC. Currently, over thirty professional, educational, and advocacy groups worldwide have policies opposing the use of FC (see https://www.facilitatedcommunication.org/organizations-opposing-fc).

Floating Letter Boards

By the early 2000s, many professionals in the field of disabilities assumed FC had been quashed and it was safe to turn their attention to other things. But they were wrong.

For many parents of nonspeaking children, the promise of FC—an intelligent, articulate child—was just too great to give up. This continued use of FC was further encouraged by filmmakers and media outlets desperate for feel-good stories. In 2004, Academy Award–winning director Gerardine Wurzburg released the documentary film *Autism Is a World*, which profiled FC-user Sue Rubin, a woman with severe autism who, with the aid of her facilitator, went on to graduate with a bachelor's degree in history from Whittier College. The film was nominated for an Academy Award and shown repeatedly on CNN. Douglas Biklen of the Syracuse University Facilitated Communication Institute coproduced the film. In 2010,

Typical keyboard used in facilitated communication (Credit: Poule | Wikipedia).

Wurzburg released another documentary, *Wretches & Jabberers*, focusing on two other FC users, with Biklen again as a coproducer. Throughout the 1990s and early 2000s, Syracuse University continued to host the Facilitated Communication Institute, and other universities also sponsored FC training. In 2010, the Syracuse center was renamed the Institute on Communication and Inclusion but continued to promote FC and its variants.

Today, variants of facilitated communication—rather than FC itself—are more popular. The negative research findings of the 1990s and the critical statements from professional organizations contributed to the waning interest in FC, but this decline also provided an opportunity for similar methods to emerge in different shapes and with different names. Furthermore, if they did it properly this time, the new purveyors of pseudoscience could avoid the pitfalls of the past.

The first version of what would become the new dominant approach was the rapid prompting method (RPM), developed by Indian educator Soma Mukhopadhyay for use with her son. In this method, the teacher is quite active in getting the pupil to point to a letter board, which the teacher holds suspended in the air. Because the typical user is nonspeaking, the teacher calls out the letters and words. Mukhopadhyay now works at the Helping Autism through Learning and Outreach (HALO) center in Austin, Texas, where she offers the method to individuals and provides training for practitioners of RPM.

The latest variation, which is spreading quickly in the United States and abroad, is known as spelling to communicate, or S2C. Its primary promoter is Elizabeth Vosseller, a speech-language pathologist who operates a center in Herndon, Virginia. Her version resembles RPM but includes a variation where the nonspeaking individual uses a pencil to poke the letters of a stencil held in the air by the communication partner. Some students move on to use a keyboard like those used with FC, but the keyboard always floats in the air, held by someone else. Vosseller promotes spelling to communicate even though her professional organization (American Speech-Language-Hearing Association) officially opposes its use.

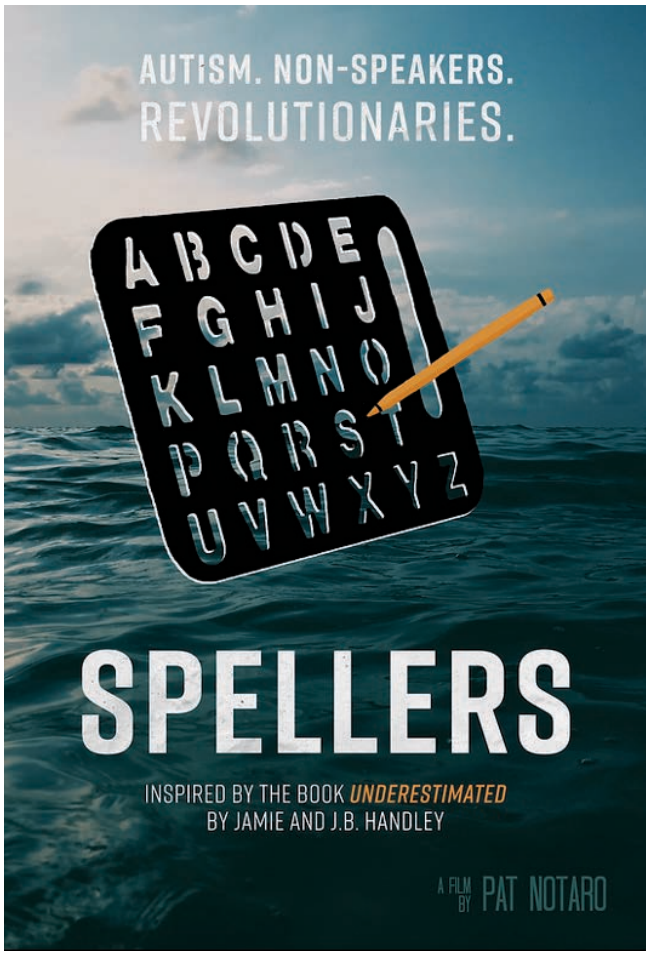
These letter board methods differ from FC in that no one touches the nonspeaking person, yet they retain a fundamental issue that raises suspicion: the involvement of a second person. Even after many years of practice, users of RPM and S2C still require someone to hold the board in the air. Videos of this method raise several questions: Why can't the letter board be placed on a table or an easel to allow the nonspeaking person to work independently? Is the communication partner calling out the words and letters accurately? Is the finger touching the board, or is the board touching the finger? The letter board is never entirely steady, and the communication partners often seem to influence the results through verbal cues and movements of the board. Finally, there is the same fundamental question that plagued FC: Where does this sudden fluency come from?

Learning the Lessons of the Past

The proponents of the new letter board methods appear to have taken lessons from both the successes and failures of the previous FC era. One of the successes of the past was the strategic use of the media to tell heartwarming stories of triumph over adversity. The genre of recovery-from-autism memoirs has a long history, and recently several autism recovery books about users of RPM or S2C have been published. In 2023, the film *Spellers* was released, inspired in part by the book *Underestimated: An Autism Miracle* by J.B. Handley, a former manager of a venture capital firm who has a nonspeaking son with autism. The film, which is available on YouTube, profiles several people who were suddenly discovered to be remarkably literate when introduced to S2C and features emotional interviews with their parents.

The news media continue to crave stories of miraculous success and frequently present them without a hint of skepticism. Soma Mukhopadhyay was featured on CBS's *60 Minutes* as early as 2003. In 2022, Elizabeth Bonker—a nonspeaking young woman with autism who began using FC and later became a speller, typing on a keyboard held in the air by her mother—delivered the valedictorian speech for her graduating class at Rollins College. She achieved a 4.0 GPA, and her speech—presumably typed with the assistance of a communication partner—was pre-recorded. The video of her address, articulated by a computerized voice while she stood silently at the podium, went viral and was credulously reported by NPR, CNN, *USA Today*, ABC News, and many other outlets.

Another lesson learned from past experiences appears to be that objective tests of authorship pose a threat to the purported miracle of the letter board. The FC controversy demonstrated that a simple blinded test could determine the true author of the typing. To date, proponents of RPM and spelling to communicate have assiduously avoided participating in these tests. Vaishniavi Sarathy, who holds a PhD in chemistry, states in the movie *Spellers*, "When a child is communicating, we don't need the science." Sarathy, also the mother of a nonspeaking child featured in the film, says, "I


AUTISM. NON-SPEAKERS.
REVOLUTIONARIES.
A B C D E
F G H I J
K L M N O
P Q R S T
U V W X Y Z
SPELLERS
INSPIRED BY THE BOOK UNDERESTIMATED
BY JAMIE AND J.B. HANDLEY
A FILM BY PAT NOTARO

Poster for the 2023 film *Spellers*

The May 1, 1920, cover of *The Saturday Evening Post* by Norman Rockwell, showing a Ouija board in use. (Wikimedia)

don't want the science. I want Sid to talk. I don't care about the science. I know that Sid is talking." This attitude is common among letter board users. As a result, these methods have been used for over two decades without any definitive evidence that the typing is actually controlled by the nonspeaking individual.

Are the Communication Partners Lying?

When the first tests of FC revealed that the messages were coming from the facilitators, observers wanted to know how this was possible. The facilitators appeared to be unaware that they were doing the typing. How could that be? Subsequent research has shown just how easy it is to produce this kind of unconscious control (Burgess et al. 1998). Both FC and the letter board methods are a Ouija-like phenomenon (see my column in this issue). Those who have used a Ouija board know that having two people involved—holding a planchette, holding hands over a keyboard, or working with a letter board in the air—leads to confusion over who is in charge. Ouija board players often claim, "I'm not doing it. You must be doing it!" Additionally, the *ideomotor effect* is a well-documented phenomenon illustrating how, upon receiving a suggestion, a person acting alone can unconsciously perform movements in the desired direction. Ideomotor effects have been implicated in hypnosis, dowsing, automatic writing, and several other phenomena.

Finally, these unconscious actions are reinforced by the philosophy advocated by the FC/RPM/S2C community. Decades ago, Douglas Biklen coined the slogan "presume competence." To show respect for people with disabilities, Biklen suggested that all people should be approached with the assumption that they are intelligent and literate. While this may sound like an admirable and disability-empowering philosophy, this assumption introduces an explicit bias. Contrary to Biklen's view, avoiding confirmation bias when assessing an individual's capabilities requires maintaining objectivity and presuming neither competence nor incompetence. Of course, many of the people who are presuming competence—the parents of nonspeaking people and their family members—are deeply invested in affirming that competence.

The Many Victims of the Anna Stubblefield Case

The events of the Stubblefield case transpired between 2009 and 2011, but the threat of shattered lives is still very real today. In 2018, a Miami man spent thirty-five days in jail and was barred from seeing his family for months based on false

allegations obtained through FC that he sexually assaulted his seven-year-old son (Balko 2018). The Stubblefield case is extreme in many respects, but it highlights the wide array of potential victims that can be harmed by promoting pseudoscientific methods of communication.

The main victim of this case is, of course, Derrick Johnson. He was not capable of consenting to sexual intercourse—nor was he capable of understanding the implications of such a decision—and, as a result, he was sexually abused by Anna Stubblefield. In addition, Stubblefield violated Johnson's inherent dignity by shaping him into a contrived persona.

Johnson's mother, Daisy, and his brother, John, were also profoundly violated. They brought a White university professor into their lives, entrusting Johnson to her care. In return, they were deceived with a fabricated story about their son and brother, leading them to endure a roller coaster ride of changing demands and expectations. Their trust was violated in dramatic fashion, and Johnson was left worse off than before he met Stubblefield. Throughout this ordeal, the family endured not-so-subtle racism and disrespect.

Stubblefield's family members are also victims. At the time of her arrest, she was married with two children. Whatever weaknesses there may have been in her marriage, she reported that separation was not under discussion before this incident. However, soon after her arrest, her marriage dissolved, and the children were denied access to their mother for extended periods. Two families were left permanently damaged.

Finally, while it's difficult to extend sympathy to Stubblefield, the film portrays her in a sympathetic light—perhaps more so than she deserves. Much of the first half of *Tell Them You Love Me* is devoted to Stubblefield's account of the story. Her face fills the screen, and she conveys the appearance of a thoughtful and caring person. That perception changes as the movie progresses.

I'm not in a position to look into Anna Stubblefield's soul and make judgments about her moral character or mental health. In a victim impact statement read in court before her sentencing, Stubblefield's ex-husband described her as a "pathological liar and a narcissist." But as outsiders, it's impossible for us to know.

The most generous evaluation of Anna Stubblefield might suggest that she too is a victim—not of the legal system or of public shaming but of her own delusions. Stubblefield is guilty of ignoring obvious evidence of Johnson's capabilities. As she recounts the beginning of her physical relationship with Johnson, the filmmakers intercut intimate scenes of Daisy Johnson spoon-feeding and bathing her son, casting doubt on the credibility of Stubblefield's narrative. Moreover, she continued to believe in a communication technique that she must have known science had long since debunked.

Toward the end of the film, Howard Shane, PhD, the communication expert at Boston Children's Hospital who evaluated Johnson before the trial, offers his assessment of Stubblefield: "I never thought she was a predator. She truly believed what she was doing was in Derrick's best interest. She was an unfortunate victim of a methodology that is very problematic."

The Wisdom of the Johnsons

The reviews of *Tell Them You Love Me* have generally focused on the unsettling and improbable scenario of a philosophy professor sexually abusing a severely disabled man, but there is no moral in that aspect of the story. As someone who has followed the FC/S2C saga for many years, I'm pleased that these events have finally been recounted so completely, a feat that could not have been achieved without the cooperation of the Johnson family: Johnson's mother, Daisy, and his brother, John. If their motive was to expose the dangers of facilitated communication and help others avoid their fate, I believe they have succeeded.

But the Johnsons have something far more important to tell us: they love Derrick. They loved him before Anna Stubblefield entered their lives and continue to love him now that she is gone. Daisy and John Johnson know Derrick better than anyone, and they have found joy in the person he is. They are not fixated on some imagined version of Derrick; they love the real person they know.

In that bit of gracious wisdom, the Johnsons have a message for us all. ■

Note

This article originally appeared on Colin Wright's substack *Reality's Last Stand*. The online version of the article with links to additional sources can be found at https://www.realityslaststand.com/p/when-silence-speaks-the-harmful-pseudoscience.

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Stuart Vyse is a psychologist and author of *Believing in Magic: The Psychology of Superstition*, which won the William James Book Award of the American Psychological Association. He is a fellow of the Committee for Skeptical Inquiry.

FORUM]

The Harm of So-Called Alternative Medicine

EDZARD ERNST

So-called alternative medicine (SCAM) enjoys the reputation of being relatively harmless. However, this is incorrect; based on thirty years of research, it's clear that SCAM causes harm on several levels.

Harm Caused by the Therapy

Of the hundreds of different therapies that comprise SCAM, some (e.g., homeopathy, energy healing) are mere placebo treatments and thus unlikely to cause any direct harm (Ernst 2022). Others can cause adverse effects and complications that can be severe, sometimes even fatal. Examples of the latter category are:

- Chiropractic can cause death. My 2010 review summarized twenty-six fatalities after chiropractic spinal manipulations. The alleged pathology usually was a vascular accident involving the dissection of a vertebral artery (Ernst 2010).
- Acupuncture can cause injuries to thoracic and abdominal viscera, to the peripheral and central nervous systems, and to blood vessels. Deaths have also been recorded from pneumothorax and cardiac tamponade (Peuker et al. 1999).
- Herbal medicine can cause a wide range of adverse effects (Ernst 2004) and unwanted herb-drug interactions (Izzo and Ernst 2009).

As no effective post-marketing surveillance exists in SCAM, the incidence of adverse events after SCAM use is essentially unknown.

Harm Caused by Diagnostic Techniques

We tend to think of SCAM as consisting only of therapeutic measures and forget that it also includes a range of diagnostic techniques largely unknown or ignored in conventional medicine. Examples are:

- Applied kinesiology
- Bioresonance
- Iridology
- Kirlian photography
- Live blood analysis
- Pulse diagnosis (in traditional Chinese medicine, or TCM)
- Radionics
- Tongue diagnosis (in TCM)
- Vega test

None of these methods are validated (Ernst and Hentschel 1995), and consequently almost all inevitably lead to false positive or false negative diagnoses. The latter could mean that a patient is given the "all clear" by the SCAM practitioner, while in fact being afflicted by a serious condition such as cancer, for instance. The harm might then consist in losing valuable time for treating the patient's condition early and successfully. In a worst-case scenario, this could hasten death. A false positive diagnosis means the patient is told by the SCAM practitioner that they have a disease, while in fact they are healthy. This is likely to cause anxiety and might be followed by a lengthy series of treatments that would cause harm to the patient's finances.

Harm Caused by the SCAM Practitioner

SCAM therapists can harm patients in multiple ways. Foremost, such harm occurs through the often-incompetent advice given by SCAM practitioners (Ernst and Schmidt 2002). This happens, for instance, if the practitioner recommends a treatment that is ineffective or significantly less effective than a comparable conventional intervention. In these situations, the patient would suffer needlessly or might lose valuable time to cure their condition at an early stage.

Another scenario where poor advice of SCAM practitioners harms patients arises when they recommend to avoid conventional interventions. A relatively well-researched example is the advice many SCAM practitioners issue about vaccinations (Schmidt and Ernst 2003).

A further way SCAM practitioners regularly cause harm is through diagnosing one of the many conditions that do not even exist. These include:

- Adrenal fatigue
- Candidiasis hypersensitivity
- Electromagnetic hypersensitivity
- Multiple chemical sensitivity
- Vertebral subluxation
- Yin/Yang imbalance

Typically, a fake diagnosis is followed by a series of prolonged and costly treatments. Eventually, the SCAM practitioner claims the condition has been cured. In some instances, harm might also occur through the way a practitioner arrives at a fictitious diagnosis. An example is the notorious overuse of X-rays by chiropractors to diagnose subluxations (Williams et al. 2024).

Most SCAM professionals medicalize normal states of reduced well-being. Many everyday health impairments have no real disease value but are merely short-term disturbances of optimal health. For many SCAM practitioners, such problems serve as occasions to boost their income. They inflate such trifles into serious illnesses that require treatment. In other words, they medicalize trivialities in such a way that:

- A low mood always represents clinical depression
- An upset stomach mutates into dangerous gastritis
- Temporary tiredness must be "chronic fatigue syndrome"
- A cold signifies the beginning of pneumonia
- A food aversion points to a food intolerance

It seems obvious that such scare mongering can cause anxiety and unnecessary costs to the patient and healthcare system.

Harm Caused by the SCAM Industry

Even though most SCAM products are not effective, the SCAM industry boasts of phenomenal financial success. The size of the worldwide SCAM market is thus projected to expand from $147.7 billion in 2023 to approximately $1489.4 billion by the year 2033 (Pharmiweb 2024). The harm here obviously consists in the money consumers pay for SCAM. This is even more relevant because healthcare budgets are notoriously tight, and the money spent on SCAM would be better invested in medicine that is proven to do more good than harm.

A further harm that is caused specifically by the TCM industry is exploitation of nature to a point where certain species might become extinct (Ernst 2018). Examples of species endangered by the SCAM industry include: black bear, musk deer, rhinoceros (for their horns), seahorse, shark, and tiger.

Harm Caused by Poor SCAM Research

Much of the research conducted in SCAM is unreliable. Several investigators have shown, for instance, that Chinese studies of TCM invariably report positive results (Tang et al. 1999). Others have reported that 80 percent of Chinese clinical trials are fabricated (Man and Mudie 2016). Much of SCAM research is of deplorable methodological quality. We have demonstrated that most SCAM journals carry almost no reports of negative findings (Ernst and Pittler 1997) and that numerous researchers of SCAM only publish positive results (Ernst 2024a). Collectively, these phenomena mean that SCAM gradually but surely undermines the public's trust in science (Ernst 2024b).

Harm Caused by Ideology

SCAM proponents systematically undermine rationality by promoting fallacious thinking (Ernst 2013). Examples include the following notions that are popular in the realm of SCAM:

- Experience trumps science
- Reductionistic thinking is wrong
- Intuition is better than evidence
- Nature knows best
- Ancient wisdom must be respected
- The medical establishment is against SCAM
- "Big Pharma" is the enemy

It seems obvious that undermining rational thought in these ways can cause harm on the societal level. This was perhaps most succinctly formulated by Voltaire: "Those who can make you believe in absurdities can make you commit atrocities."

Conclusion

So-called alternative medicine is regularly being promoted as gentle and safe. This notion, though false, is an excellent sales gimmick. Even though the risks of SCAM are generally under-researched, it is indisputable that they do exist and that SCAM can cause harm on multiple levels.

Proponents of SCAM often counter that conventional medicine can cause much more harm than SCAM. But this refutation misses an important point: The value of any treatment is not determined by either the harm or the benefit it generates; *it depends crucially on the balance between the harms and the benefits it can produce.*

As the benefits of SCAM are often only marginal or entirely absent, even relatively minor risks count heavily. It follows that the risk-benefit balance of much of SCAM fails to be positive. In turn, this means that consumers should think twice before they use or recommend SCAM. ■

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Edzard Ernst is emeritus professor, University of Exeter, United Kingdom, and author of several books, including the newly released *Bizarre Medical Ideas ... and the Strange Men Who Invented Them*.

FORUM]

Tracing a Century-Old Case of So-Called Spontaneous Human Combustion

JAN WILLEM NIENHUYS

Michael Harrison's book *Fire from Heaven* (1976), about spontaneous human combustion, opens one chapter with a widow in Sydenham, London, named Euphemia Johnson, aged sixty-eight. She returned home from shopping on a hot summer day in 1922, made herself a cup of tea, and then instantly burned to a pile of ash after the first sip. However, her "calcinated bones" were lying within her *unburned* clothes (Harrison's quotation marks and italics). The story takes up two whole pages. Paranormal researcher Matt Mills has tried to find Euphemia Johnson in British death records to no avail. He thought the appalling story was complete fiction.

Harrison claims to quote the book *Lo!* (1931) by Charles Fort but provides no page number. Nowadays *Lo!* is on the internet. I found the quote in chapter 14, and it was immediately clear where the 1922 date came from. Fort relies on the sixth edition of a handbook of forensic medicine by Dr. Dixon Mann, which was published in 1922. Apparently Harrison didn't bother to consult this handbook, because Mann gives a footnote: "Brit. Med. Journ. 1905." That is a letter of general practioner Dr. Archer from Feltwell, Brandon, seventy miles from London. Archer does not name the victim. Searching the excellent British Newspaper Archive turned up an article in the *Norwich Mercury* of May 31, 1902, about the death of a widow named Sarah Morley (born Rolfe), aged seventy-two, in Hockwold cum Wilton, near Brandon.

From the *Norwich Mercury* and the doctor's letter, I deduce that the following happened: Morley, who was living

alone, was last seen alive in the evening of Friday, May 23, 1902. A neighbor brought her a bottle of gin and saw Morley reading a book or magazine by candlelight. At 7:15 the following morning, the local constable noticed that the windows and curtains were blackened and the front room was full of smoke. He forced entry, and he and some others searched for Morley upstairs, but then, coming down again, they saw something they had overlooked at first: on the floor, in front of a chair about a yard from the table, was a small pyramid of calcined bones with a skull on top. The newspaper merely says "burned almost beyond recognition," but Dr. Archer, who had been invited on the scene, provides more details. The ceiling and upper part of the walls were scorched, but the baize table cloth wasn't—although the chintz cover of the iron chair was gone.

An inquest held that same Saturday concluded this was a case of "spontaneous combustion"—no doubt because of the gin and Morley's alcoholism. But gin can't burn.

I think Morley must have felt suddenly unwell when her heart was giving up. She was sitting at the table while reading but pushed back the chair, got up to go to the toilet (a common feeling in case of sudden cardiac death) or to get fresh air, took the candle in her hand, and then collapsed dead on the floor. The candle set fire to her clothes (contrary to Harrison's report), and thereafter her body was slowly consumed by the wick effect, in which clothing acts like the wick of a candle to melt the body fat of the victim. In the still air of the room, the heat and the copious smoke went straight up, so nearby furniture didn't burn.

That similar fates have seemed to strike predominantly heavy drinkers is easily explained by their increased risk of sudden cardiac death.

Morley is buried under a big yew tree in the churchyard of Hockwold cum Wilton, and a picture of her tombstone can be found online (https://skepsis.nl/documents-re-sarah-morley/), containing verbatim renderings of all relevant sources—but not Harrison's despicable rubbish. ■

Jan Willem Nienhuys is a retired mathematician, formerly of the Eindhoven University of Technology, secretary of the Dutch skeptical organization Skepsis, and fellow of the Committee for Skeptical Inquiry. He coauthored a Dutch encyclopedia of pseudoscience.

FUN & GAMES

Edited by Stephen Hupp

YOU CAN FIND THE ANSWERS TO THESE GAMES IN SECRETS REVEALED (P. 66).

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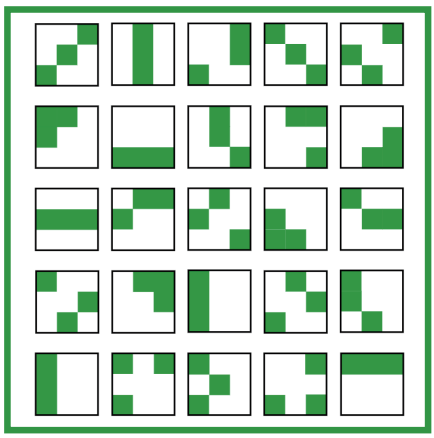
2			
3			
4			



CRACK THE CODE

Find the hidden message by interpreting the key. You'll need to use all six issues of this year's SKEPTICAL INQUIRER. The first person to email the answer to shupp@centerforinquiry.org will win a prize.

Hints: A clue is in Stuart Vyse's article, and another clue is below.

SKEPTICROSS

ACROSS

1. Body part that moves when you lie.
2. Lying is a bad ____.
3. Cartoon character with a long nose.
4. Where fortunes change based on news.

DOWN

1. Dishonest animal in homonym humor.
2. How not to stand when someone lies.
3. Grossest veggie (if I'm being honest).
4. The ____ bet is to tell the truth.

WORD NOODLE

"Make a new seven-letter word (green = correct letter and position; yellow = correct letter; black = wrong letter). ***Clue: Something SCIENCE can do.***

SCIENCE

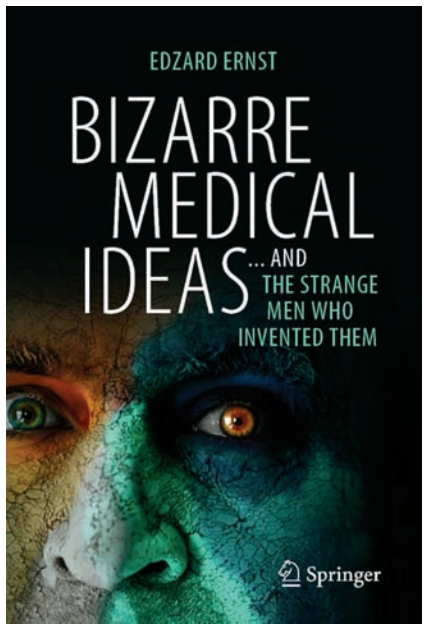
ANTIQUE MALLARKEY

Acquired from an antique mall in St. Louis, Missouri, CONSPIRACY is "a spy game of bluffing and betrayal" (copyright 1982). Filled with "all the excitement of international espionage," players move various spies around the board. Perhaps a player paid a hefty price to control a spy (as logged in their bank book) or perhaps that player is bluffing. The first player to successfully direct a spy to return the "top secret" briefcase to their own intelligence headquarters wins the game. Rita Palm is likely the most interesting spy from the perspective of SKEPTICAL INQUIRER readers. Reportedly, "she and her sister Claire Voyant were once a successful musical comedy team who starred in the smash Brazilian hit 'A Penny for Your Thoughts.' She now works solo and illegally, using her intuitive powers and almost-photographic memory to decode secret ciphers."

Inventor Tales in Alternative Medicine

Katie Suleta

Reflexology (shown above) is one of the many "so-called alternative medicines" described in Edzard Ernst's book.



Bizarre Medical Ideas ... and the Strange Men Who Invented Them. By Edzard Ernst. Springer, 2024.

Few people keep such a close eye on so-called alternative medicine (SCAM) as Dr. Edzard Ernst. His life's work promotes critical thinking and demonstrates through evidence and logic that SCAM doesn't work. His latest book, *Bizarre Medical Ideas … and the Strange Men Who Invented Them*, is a natural extension of his legacy. An encyclopedia of alternative medicine, the book highlights the people behind the invention, promulgation, and continued promotion of these ideas.

The book is filled with cautionary tales demonstrating the hazards that follow from limited critical thinking skills, conspiracy thinking, and delusions of grandeur. A common theme is that many types of alternative medicine are rooted in seemingly small and simple errors that many people make, such as confusing correlation with causation, accepting only confirmatory evidence, and moving the goal posts.

Example anecdotes from the book include:

- Reflexology: William Hope Fitzgerald made and influenced many claims about reflexology, which has been claimed to lead to better relationships; better cardiovascular circulation; and improved mental, emotional, and spiritual balance and stability—and it all comes from your feet!
- Gerson Therapy: Max Gerson's story helps us see where the panic about processed foods, cancer diet culture, and coffee enemas for health originates.
- Alexander Technique: Frederick Matthias Alexander demonstrates why the "it worked for me!" conclusion needs to be tested and should not just be put into practice and marketed. He seemed to be the modern health coach of his day.
- Homeopathy: Samuel Hahnemann's story alone provides a solid example of being too attached to one's ideas, ignoring evidence to the contrary, and refusing to understand how the physical world works.

While I enjoy a good book of science-related parables as much as the next skeptic, Ernst goes one step beyond merely providing the background of these people and their ideas. He's designed a scale to measure alternative medicine ideas, The Humbug Score, and applied it to all the stories. The

Humbug Score is bound to become the rubric by which skeptics measure all ideas, not just those in the medical realm. It encompasses important aspects such as absurdity of the concept, use of intuition, failure to produce evidence, rejection of evidence, and conspiracy theories. Every idea gets a score (0–2) in twelve areas, and the total is added together. The "perfect" Humbug Score is a twenty-four, reserved for the most egregious ideas, such as radionics. The lowest Humbug Score included in the book was for autogenic training, which earned a nine.

Ernst doesn't provide classification categories or cut-off scores for when an idea should be definitively determined dubious, but that's not the point of the Humbug Score. The scale itself isn't supposed to be scientific in the literal sense. Rather, it's an additional way to articulate the degree to which an idea is bizarre. It's also meant to demonstrate that sometimes even seemingly preposterous ideas can be useful. This gets to the heart of the demarcation problem (i.e., the sometimes blurry line between science and pseudoscience), supporting our critical thinking skills and keeping us open minded. If we go where the data lead us, we can end up in unexpected places. The Humbug Score allows us to see why we shouldn't always throw the baby out with the bath water.

This is not to say that every idea should be taken seriously and require that time, energy, and resources be devoted to research. Ernst is a staunch proponent of the premise of prior plausibility, and that comes through in the book. But he also spends time thinking about the possibility that just because an idea didn't germinate from an expert doesn't necessarily mean that it can't be important.

While it's helpful to include the Humbug Scores, I have no doubt that they will also become a badge of honor for some practitioners of alternative medicine: "I scored a perfect twenty-four on Ernst's Humbug Score!" For example, I believe Albert Abrams would have delighted in the perfect score he earned for radionics. It's only a matter of time before the score is weaponized and used to market alternative medicine.

Ernst, himself a physician, has chosen to highlight many physicians who stepped out of their training and expertise. These tales are to be used as a warning, especially to those who practice medicine. While society may hold doctors on a pedestal, that is not to say that they know everything or always have good ideas. Ernst's book demonstrates what can happen—and why it's dangerous—when anyone, but especially physicians, become so enamored with their own cunning, intelligence, and ideas that they forget to ask the question "Is it even feasible?" ■

Katie Suleta is a trained epidemiologist and informaticist. She currently works as a regional director of research in graduate medical education for HCA Healthcare. She has a doctorate of health sciences in clinical practice and education as well as master's degrees in public health and health informatics. She also writes for the American Council on Science and Health.

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Meet the (Real) Rothschilds

Steve Cuno

This is embarrassing.

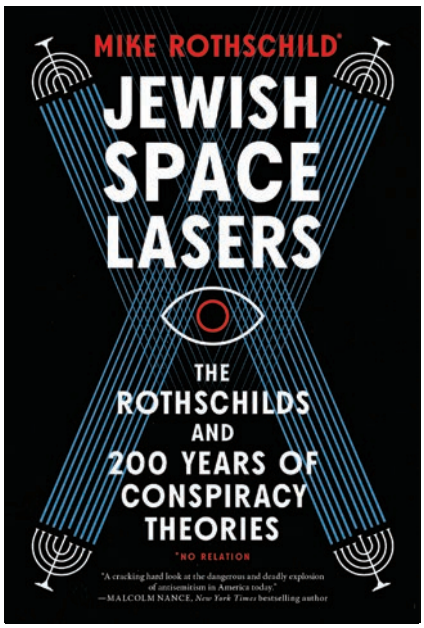
Despite the admonition-cum-cliché not to judge a book by its cover, I did exactly that. With one gander at the cover of *Jewish Space Lasers: The Rothschilds and 200 Years of Conspiracy Theories*, I was ready for a hilarious, sarcastic send-up. In I plunged, ready to laugh at the expense of silly fear mongers who blame every real or imagined woe, threat, and inconvenience on The Jews (or, in fairness to more selective anti-Semites, The Rich Jews).

Mind you, my error was an understandable one. The book's dust cover features an illustration of menorahs firing crisscrossing beams. A footnote disclaims that the author, Mike Rothschild, is "no relation." And the book's title derives from unwitting comedian U.S. Representative Marjorie Taylor Greene's suggestion that "the Rothschilds" (code for "The Rich Jews") fired lasers from a satellite to produce and profit from the 2018 California wildfires.

Comedy gold, no?

I realized my error but a few pages in. *Jewish Space Lasers* is no comedy. It's an empathetic, synoptic history of a persecuted people through the lens of one family that had the gall to attain financial success despite laws meant to prevent it. It is painstakingly researched, well documented, and, its scholarship notwithstanding, eminently readable.

No-relation Mike Rothschild deserves a medal for the "painstakingly researched, well documented" part. Maintaining a generations-old tradition of media spotlight avoidance, the contemporary Rothschilds declined the author's interview requests. And oft-quoted articles and pamphlets dating to the onset of the titular family's rise weren't much help: their apparent strong provenance notwithstanding, many have turned out to be early, anti-Semitic fabrications that have for centuries duped


MIKE ROTHSCHILD*
JEWISH SPACE LASERS
THE ROTHSCHILDS AND 200 YEARS OF CONSPIRACY THEORIES
*NO RELATION
"A cracking hard look at the dangerous and deadly explosion of antisemitism in America today."
—MALCOLM NANCE, New York Times bestselling author

Jewish Space Lasers: The Rothschilds and 200 Years of Conspiracy Theories. By Mike Rothschild. Penguin Random House, 2023.

less-scrupulous historians. For author-Rothschild to dig beyond was no small feat, but the perseverance paid off. Rothschild serves up a solid history that is devoid of sensationalism and riveting in its own right.

The author opens by readily dispatching the ravings of conspiracy mongers the likes of Bill O'Reilly, Alex Jones, Q, and others, which he sums up thus:

> Yes, *those* Rothschilds—the legendary European banking dynasty that rose up from the Frankfurt ghetto to become the kings of continental finance, lending, mining, and railroads. Their largesse, their wealth, their old money class, their ability to make or break nations with a loan of mere peanuts (to them), and their sheer *everything* are famous around the world. And their heirs are still out there, still working in banking, finance, art, literature, and philanthropy … puppet masters who control all but a few central banks, have funded both sides of every war since the American Revolution, hold as much as 80 percent of the world's wealth in their coffers, and are part of a sick occult web of rituals that involve murder and human sacrifice. The Rothschild mystique walks alongside a Rothschild conspiracy theory industry that is, unfortunately, tied to some of the most violent spasms of antisemitism of the last two centuries.

The bulk of *Jewish Space Lasers* dishes up the family's real story, accompanied by healthy side-servings of the respective histories of anti-Semitism and conspiracy theories. "Where conspiracy theories become coin of the realm," the author states, "antisemitism always follows."

Yet the book is at its most frightening in its final chapters, which chronicle the recent, mega-explosion of anti-Semitic conspiracy theories fueled by mass media and social sites—the latter, Rothschild wryly observes, having "emerged as the principal vector by which strangers yelled at each other." What takes center stage is the human propensity to dehumanize an entire population as Them-Not-Us—and the lust to believe anything negative about Them, no matter how ludicrous, undocumented, contradictory, or cruel, and no matter how ugly the consequences.

So it is that *Jewish Space Lasers* accomplishes more than setting the record straight about a family and a people. It is a cautionary tale about human irrationality. Sadly, as is the case with most cautionary tales, the people most likely to read it will not be the ones we most desperately need it to reach. ■

Steve Cuno is the author of *Behind the Mormon Curtain: Selling Sex in America's Holy Land* and the as-told-to author of *"It's Not About the Sex" My Ass: Confessions of an Ex-Mormon Ex-Polygamist Ex-Wife*. In his spare time, Cuno enjoys smarting off and forcing unsuspecting victims to look at photos of his grandchildren. You can see more of his writing at www.stevecuno.com.

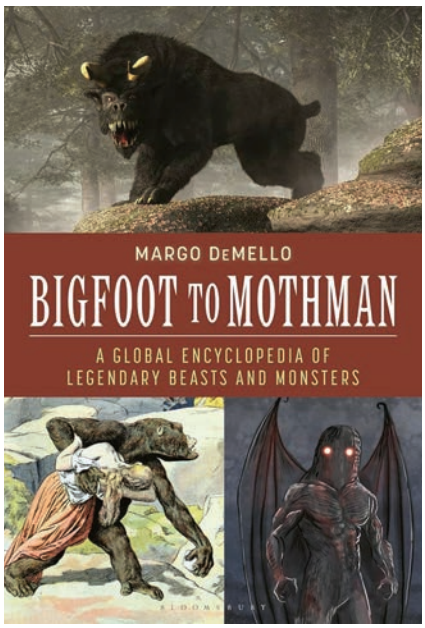
Exploring the World's Cryptids and Mythical Creatures

Terence Hines

An encyclopedia should serve two purposes. First and foremost, it should provide accurate and unbiased information. Second, it should contain sufficient references to allow an interested reader to know where to obtain additional information on any specific topic. Regarding these two criteria, Margo DeMello's new book *Bigfoot to Mothman: A Global Encyclopedia of Legendary Beasts and Monsters* is quite good—but not excellent.

The subtitle is a bit misleading because it does not indicate that the focus of the book is on cryptozoology and creatures known as *cryptids*. In the preface, the author states that the book "will explore the world's cryptids—those hidden or secret animals believed to exist at the margins of human society." The book "will not attempt to either prove or debunk the claims of cryptozoologists" (p. 1). This is a good approach, and the book generally achieves it, with some exceptions noted below. DeMello argues that "the most fruitful lens through which to view cryptids is a cultural one" and that such an approach "does not preclude scientific inquiries into cryptids; it simply allows us to better understand the historical and cultural context in which they live" (p. 1). This approach does add important information and context to the scientific approach often seen in purely skeptical writings on cryptozoology.

There is a catch, however, in appealing to indigenous cultures to help understand and explain cryptids. DeMello is aware that the use of indigenous cultural beliefs in this way can be problematic. For instance, "using folklore and myth from indigenous cultures in-service to cryptozoology" results in their "losing all cultural nuance" (p. 10). It's shoehorning myths from one culture into a European shoe; "Just because the Salish [of the North American Pacific Northwest], for example, believe in a wild man figure who guards nature does not necessarily mean that wild men exist as biological flesh-and-blood beings who can be discovered, analyzed, and tamed" (p. 10).



Bigfoot to Mothman: A Global Encyclopedia of Legendary Beasts and Monsters. By Margo DeMello. Bloomsbury Academic, 2024.

DeMello points out, correctly, that "science does not exist outside of history or culture," and so science can be biased. But she then refers to what she calls "indigenous science," which "might offer us a new way to understand creatures that exist outside of Western science" (p. 4). I'm not at all sure what that means. Either a creature exists (or existed in the past) or it does (did) not. If she means that a cryptid can "exist" in the legendary ethos of a culture but not in reality, then that's true. But her wording is unclear here. Later she describes a small subgroup of cryptozoologists who do not believe that cryptids are "real" in any objective sense but are instead some sort of "magical" supernatural beings, perhaps from another dimension—whatever that means. Such an argument is a perfect cop-out from providing any evidence whatsoever that the creatures are real. It's little more than handwaving evasions, much like saying I have an invisible dragon in my basement.

In two places in the introduction, DeMello makes statements that I cannot accept. First, she says of cryptozoologists that "their hypotheses very rarely are subject to review or evaluation outside of what is functionally a closed community" (p. 4). I think that *hypothesis* is too strong a word here; cryptozoologists seem not to have *hypotheses* in the scientific sense, but instead they have beliefs. But call them what you will, these beliefs have in fact been frequently "subject to review and evaluation" by skeptical investigators, including in the pages of this magazine. That the results of these evaluations are negative is unfortunate for the cryptozoologists but doesn't mean they haven't been done.

Later DeMello writes, "But it is the scientific establishment, as well as the government, that not only does not believe in the existence of cryptids but is (most likely) also engaged in covering up their existence" (p. 8). The phrasing makes it sound like she endorses this, but from the rest of what is in the introduction, I tend to doubt this. I think what she instead meant to convey, and rightly so, is that many cryptozoologists believe this.

The issue of eyewitness sightings is an important one in the cryptozoology world. DeMello acknowledges that "first-person witness accounts … are notoriously unreliable" (p. 9) and such unreliability plays a role in reports of cryptids. Further, she notes the "importance that cultural memory plays in what we see and how we interpret it. Every American knows who Bigfoot is, what he looks like, and some basic elements

of his ecology and behavior" (p. 9). Perception is constructive; when presented with an ambiguous stimulus, a sort-of-human shape in a dark forest, it's easy to perceive a Bigfoot when what was really there was a large stump. The culture of cryptozoology is such that "witness accounts are not ridiculed but accepted, no matter how incredible" (p. 9). Regarding fakery, I agree with DeMello that "only a very small percentage of sightings are hoaxes" (p. 9).

The book is divided into two major sections. The first covers cryptids, creatures that do not have largely religious or mythical origins and are believed by some to actually exist. The section is 188 pages long and has fifty-four entries. It includes both well-known creatures and many that are less well known, even obscure. The individual entries are written in a "just the facts" style with little editorializing, which is appropriate. For the better-known creatures, DeMello sometimes provides adequate references to skeptical literature and sometimes not. The entry on the Loch Ness monster is appropriately skeptical, concluding that the "evidence for the existence of the monster is limited to eyewitness sightings and the occasional photograph or video" (p. 124). But the "Further Reading" list doesn't include anything by either Joe Nickell or Benjamin Radford. Radford's work on the chupacabra, on the other hand, is described in its own entry. The entry on the New Jersey Devil does list the definitive skeptical book on that beast, Brian Regal and Frank Esposito's *The Secret History of the Jersey Devil* (2018). The Mothman entry does not discuss Nickell's explanation.

For lesser-known creatures (ever heard of the Loveland Frogman? Me neither.), there have usually been no skeptical investigations at all. In these cases, the creature is well described, and a brief history is given, often including interesting early references from newspapers and travel books.

The second section is titled "Extinct, Invented, or Mythical Creatures Similar to Cryptids" and is sixty pages long with forty entries. It is impossible to cover, in so few pages, all the creatures that would fall under the title, so a great deal of arbitrary selection took place. The entries range from the Al-Mi'Raj, a "horned rabbit known in the Arabian world" (p. 204) first described in the thirteenth century, to the Minnesota Iceman, a hoax from the 1960s. The entries in this section are interesting in a sideshow sort of way but don't fit well in a serious encyclopedia devoted to "real" cryptids.

There is an index, a bibliography, and an appendix that lists cryptozoology podcasts, TV series, organizations, "well-known cryptozoologists"—which includes Nickell and Radford—monster-themed festivals, and even five "cryptozoology training and certificate programs." Who knew?

As a source of information on lesser-known cryptids and related entities, the book does contain useful information and is fun to read. But is it worth $100? Probably not to anyone who is already familiar with the skeptical literature on the topic. ■

Terence Hines is professor of psychology at Pace University and author of *Pseudoscience and the Paranormal*. He is a CSI fellow.

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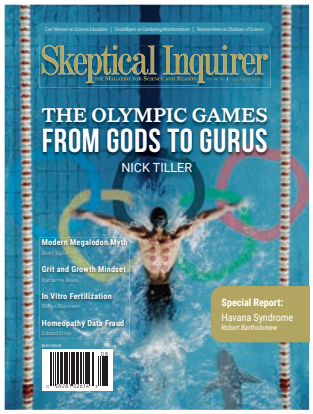


Savoring Uncertainty

Despite my surprise that SI published a film spoilers discussion (in the July/August 2024 issue), I mildly enjoyed some of the "Savoring Uncertainty" article by Stuart Vyse. However, Vyse made the strong assertion that "tolerance for ambiguity" is one of "the characteristics you would want in a critical thinker or scientist." WTH?

Of course, the assertion quoted above is itself richly ambiguous. Maybe he meant to limit his meaning to moral ambiguity or ambiguous plots. But alarmingly, that ambiguous quote can be wrongly taken to mean *claim ambiguity*. Why is that a problem? Because science claims are (supposed to be) the direct opposite of ambiguous—crystal clear and sharply focused.

Ambiguous claims are a logical fallacy, as well as a standard trick in the pseudoscience tool bag to "move the goal posts" when a skeptic shows why their claim fails. For example, gurus claiming to levitate try to distract donors to focus on a different kind of "levitation" as in overall sentiment, not whether they're actually rising off the ground. Astrologers distract from their evidence paucity with complex nonsense trying to sound like they have evidence, and people arguing for "intelligent design" subtly change their definitions.

Please clarify in detail your article's ambiguity, because as it sits, that should not be tolerable in a journal defending science.

David Dilworth
Carmel, California

Stuart Vyse responds:

I am happy to hear that David Dilworth enjoyed some of my article "Savoring Uncertainty: A Skeptic Goes to the Movies." The part of the article he enjoyed less reveals a misunderstanding of what I meant by the phrase "tolerance for ambiguity," which I suggested is one of the "characteristics you would want in a critical thinker or scientist." I take part of the blame for this misunderstanding.

I agree with Dilworth's suggestion that ambiguous claims can be a fallacy and a tactic for obfuscation in argument, but tolerance for ambiguity is a different thing altogether. Tolerance for ambiguity is proposed as a personality trait that people possess in differing degrees. People who have low tolerance for ambiguity find unanswered questions uncomfortable and are more likely to seize on an explanation to fill the gap in their understanding. For example, studies have shown that people with lower tolerance for ambiguity are more likely to be superstitious. Superstitions create a sense of order and control when order and control are lacking. Meanwhile, higher tolerance for ambiguity is correlated with greater creativity and scientific thinking.

If you think about the job of the scientist—or any critical thinker—it is to find solutions to unanswered questions. Some scientists spend many years working on a single problem. If they could not live with the uncertainty of not knowing the answer, they would be more likely to seize on a quick solution that ends up being wrong. The ultimate goal is certainty, of course, but a good scientist may have to live with not knowing for a long time before finding the answer.

I should have been less ambiguous about all of this.

Fun and Games

I'm a little concerned about your new look in the July/August 2024 issue. In the back several pages, the games and puzzles look like something promoting a junior edition, sadly replacing(?) the letters pages. "Hot Takes" on pop movies and Shark Week TV tie-ins add little to serious journalism.

B. Higinbotham
Massachusetts

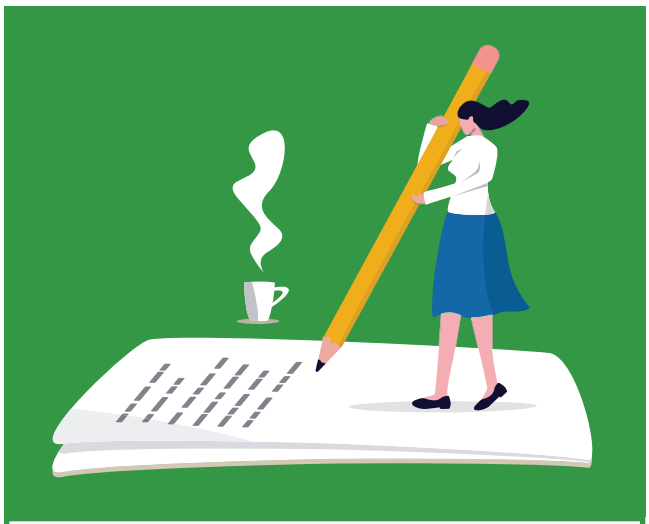
Editor Stephen Hupp responds:

I do very much value your feedback. I am squarely to blame for the Fun and Games section, but it's not meant to replace our serious pieces or the Letters to the Editor section. We've had plenty of both in the past six issues, and we'll continue to do so. I hope you'll come to appreciate the joy I find in the fun and games too. My hope is that they will increase how much families look at the magazine together so that we can help bring up the next generation of skeptical inquirers. Thank you for subscribing. Stick around, because you're in store for more science, reason, and fun.

B. Higinbotham responds back:

Thanks for the courteous and quick reply. These days it's rare to get a personal response from any organization. Particularly when you want to return product "for your money back!" from the latest TV miracle powder (of which you may want to review sometime). I did have to scan the microscopic print, however, to discover your email address.

I used to read Skeptical Inquirer *via the library until they kept disappearing, never to be returned; a compliment of sorts, I suppose. But that moved me to subscribe. I hope you remain with us a long time, as so many magazines and newspapers fold or go online, a form of reading that gives me a headache. Sitting in a favorite chair, flipping through a real magazine is so different and a relaxing pleasure.*



Send in a Letter to the Editor

Letters to the Editor are for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters received, not all can be published. Those selected may be edited for space and clarity. Authors criticized in the letters column may be given the opportunity to respond in the same issue. You can also send in brief "Hot Takes" on your favorite (or least favorite) new movies. Submit by email text (not attachment) to letters@skepticalinquirer.org. In the subject line, provide your surname and informative identification, e.g., "Smith letter on Jones evolution article." Include your name and location (City, State) at the end of the letter.

SECRETS REVEALED

Skepticross Answer

1 L	2 I	3 P	4 S
2 I	D	E	A
3 O	L	A	F
4 N	Y	S	E

Word Noodle Answer

INSPIRE

Peek Inside the *Conspiracy* Game

Seven Issue Sequence

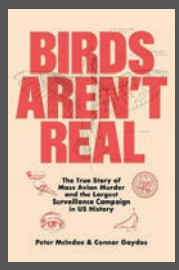
Each of the most recent seven issues of SKEPTICAL INQUIRER contains clues to multiple hidden five-digit codes. To date, no codes have been discovered and no prizes have been claimed. For more, read "Summer Shenanigans" in SI, July/August 2024.

Secrets on the September/October 2024 Cover

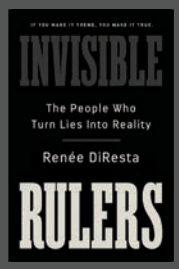
- The house has thirteen visible windowpanes.
- The license plate says "GSOW" for Guerrilla Skepticism on Wikipedia.

[NEW AND NOTABLE BOOKS

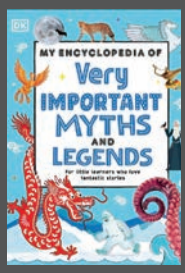
Edited by Stephen Hupp. Listing does not preclude future review.


BIRDS AREN'T REAL
The True Story of Mass Avian Murder and the Largest Surveillance Campaign in US History
Peter McIndoe & Connor Gaydos

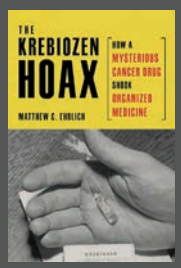
BIRDS AREN'T REAL: The True Story of Mass Avian Murder and the Largest Surveillance Campaign in US History. In the *New York Times*, Madison Malone Kircher wrote, "[Peter] McIndoe and [Connor] Gaydos are not to be taken literally. Instead, Birds Aren't Real provides a wry commentary on an era where conspiracy theories are no longer relegated to shadowy internet forums and the fringes of media." St. Martin's Press, 2024.



INVISIBLE RULERS: The People Who Turn Lies into Reality. Writer and researcher Renée DiResta examines how propagandists influence online crowds. In a review, Jonathan Haidt wrote: "I am in awe of DiResta's ability to see through the digital haze and identify many of the most important threats coming at the United States and humanity more broadly. Invisible Rulers is essential and riveting reading." PublicAffairs, 2024.



MY ENCYCLOPEDIA OF VERY IMPORTANT MYTHS AND LEGENDS: For Little Learners Who Love Fantastic Stories. The publisher is listed as the author for this book targeting children between the ages of five and nine. Covering a variety of myths and legends, the book includes (somewhat) skeptical comments such as this take on Yetis: "So far, there is NO SCIENTIFIC PROOF." DK Children, 2024.



THE KREBIOZEN HOAX: How a Mysterious Cancer Drug Shook Organized Medicine. Journalist Matthew C. Ehrlich skewers a cancer treatment hoax. CSI Fellow William London wrote this blurb: "A compelling and fair-minded account aimed at anyone who likes a good story about white-collar schemes and scams. 3 Fields Books, 2024.

TRUE OR FALSE? The Science of Perception, Misinformation, and Disinformation. Clinical psychologist Jacqueline B. Toner, PhD, had pre-teens and young teens in mind when writing this book that "explores what psychology tells us about development and persistence of false perceptions and beliefs and the difficulty of correcting them." The book also shares "ways to debunk misinformation and think critically and factually about the world around us." Magination Press, 2024.

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